PB89-188791

Superfund Record of Decision (EPA Region 1)
Yaworski Lagoon Site, Canterbury Township, Connecticut
(First Remedial Action), September 1988

(U.S.) Environmental Protection Agency, Washington, DC

29 Sep 88

U.S. Department of Commerce
National Technical Information Service
NTIS

United States
Environmental Protection
Agency

Office of
Emergency and
Remedial Response

EPA/ROD/R01-88/027
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EPA

Superfund Record of Decision:

Yaworski Lagoon, CT

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16. Abstract (Limit: 200 words)

The Yaworski Lagoon site is a dewatered and backfilled lagoon, approximately 700 feet and 300 feet wide, and surrounded by an earthen dike. It is located on an approximately 100-acre section of land in Canterbury Township, Windham County, Connecticut, on the floodplain of and bordered on the north, south and west by the Quinebaug River. The area surrounding the site includes agricultural land to the east and south. Leachate ers the ground water from below the lagoon; seepage from the lagoon dikes and surface noff from the site flow to adjacent wetlands. Approximately 2000 feet southeast of the site is an operating solid waste landfill owned by James Yaworski, the same person who operated the lagoon. The landfill contributes some contamination to ground water, but EPA monitored the site in 1988 and determined the contamination to be much less than from the lagoon. Between 1950 and 1973, sludge materials and drums of industrial waste including solvents, paint, textile dyes, acids, resins, and other debris, about 50,000 barrels of waste material altogether, were deposited in the lagoon. The lagoon currently contains approximately 65,000 cubic yards of contaminated sludge covered by about 60,000 cubic yards of contaminated debris. The sludge is a mixture of water, dirt, VOCs, and other organic compounds at concentrations above 10,000 ppm. Metals are at concentrations above 1000 ppm. Monitoring wells were installed at the site in 1976
(See Attached Sheet)

17. Document Analysis a. Descriptors
Record of Decision
Yaworksi Lagoon, CT
First Remedial Action - Final
Contaminated Media: gw, sediments, sw, soil
Key Contaminants: metals (chromium, lead), organics (PAHs), VOCs (benzene, toluene, xylenes)

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

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See Instructions on Reverse

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16. ABSTRACT (continued)

and ground water contamination was detected. In 1982, following an investigation of the site, CT DEP ordered Yaworski to close the lagoon. The primary contaminants of concern affecting the ground water, soil and sediments are VOCs including benzene, toluene and xylenes, organics including PAHs, and metals including chromium and lead.

The selected remedial action for this site includes: installation of a RCRA cap; improvement of dike around the lagoon to ensure protection from floods; establishment of a ground water protection standard (ACL); and monitoring of ground water for 30 years. A ground water treatment method will be established as part of a corrective action program if, after implementation of the source control remedy, ground water contamination remains above ACLs. The estimated capital cost of this remedial action is $1,673,000 with present worth O&M of $716,600.

RECORD OF DECISION

Yaworski Lagoon Site
Canterbury Township, Connecticut

STATEMENT OF PURPOSE

This decision document presents the selected remedial action for the Yaworski Lagoon Superfund site in Canterbury Township, Connecticut. The remedial action was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and to the extent practicable, the National Contingency Plan, 40 C.F.R. Part 300 et seq. (1987). The Regional Administrator for Region I of the United States Environmental Protection Agency (EPA) has been delegated the authority to approve this Record of Decision.

The State of Connecticut has concurred on the selected remedy and has determined that it will attain applicable or relevant and appropriate Connecticut laws and regulations.

STATEMENT OF BASIS

This decision is based on the Administrative Record for the site developed in accordance with Section 113(k) of CERCLA. The attached index identifies the items that comprise the Administrative Record.

The Administrative Record is available for public review at the Canterbury Public Library and the EPA Region I Waste Management Division Records Center at 90 Canal Street in Boston, Massachusetts.

DESCRIPTION OF THE SELECTED REMEDY

The response action for the Yaworski Lagoon site is a comprehensive remedy that combines components of source control and management of migration. In sum, waste in the lagoon will be contained by an impermeable cap that complies with the Resource, Conservation and Recovery Act (RCRA) and other applicable or relevant and appropriate environmental laws, the dike around the lagoon will be improved to ensure that the dike can withstand floods, a ground water protection standard known as Alternate Concentration Limits (ACLs) will be established, and monitoring will be conducted to ensure that the ACLs are not exceeded. These actions will ensure that site contaminants do not pose a threat to human health or the environment.

DECLARATION

The selected remedy is protective of human health and the environment, attains federal and state requirements that are applicable or relevant and appropriate for this remedial action, is cost-effective and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. The remedy does not utilize treatment and thus does not meet the preference for remedies that employ treatment as a principal element.

9/29/88
Date

Michael R. Deland
Michael R. Deland
Regional Administrator

Yaworski Lagoon site
Canterbury, Connecticut

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ROD DECISION SUMMARY

Yaworski Lagoon site
Canterbury Township, Connecticut

I. SITE NAME, LOCATION AND DESCRIPTION

The Yaworski Lagoon site is located on approximately a 100-acre parcel of land in Canterbury Township, Windham County, Connecticut. See Figure 1. The site is bordered by the Quinebaug River on the north, south, and west, and Packer Road on the east. The nearest town, Plainfield, is three miles to the east.

The site is within a meander loop on the floodplain of the Quinebaug River. The site is a dewatered and backfilled lagoon, approximately 700 feet long and 300 feet wide, surrounded by an earthen dike. Between 1950 and 1973, sludge materials and drums of industrial waste including solvents, paint, textile dyes, acids, resins, and other debris and industrial trash were disposed in the lagoon. Approximately 50,000 barrels of waste material were deposited in the lagoon during its operating life. Historical photographs of the site indicate that the lagoon originally consisted of two basins separated by a narrow, earth-filled partition, which was used as a ramp for waste disposal. The lagoon currently consists of an estimated 125,000 cubic yards of waste and backfill materials. The fill material supports grasses, plants, shrubs, and small trees.

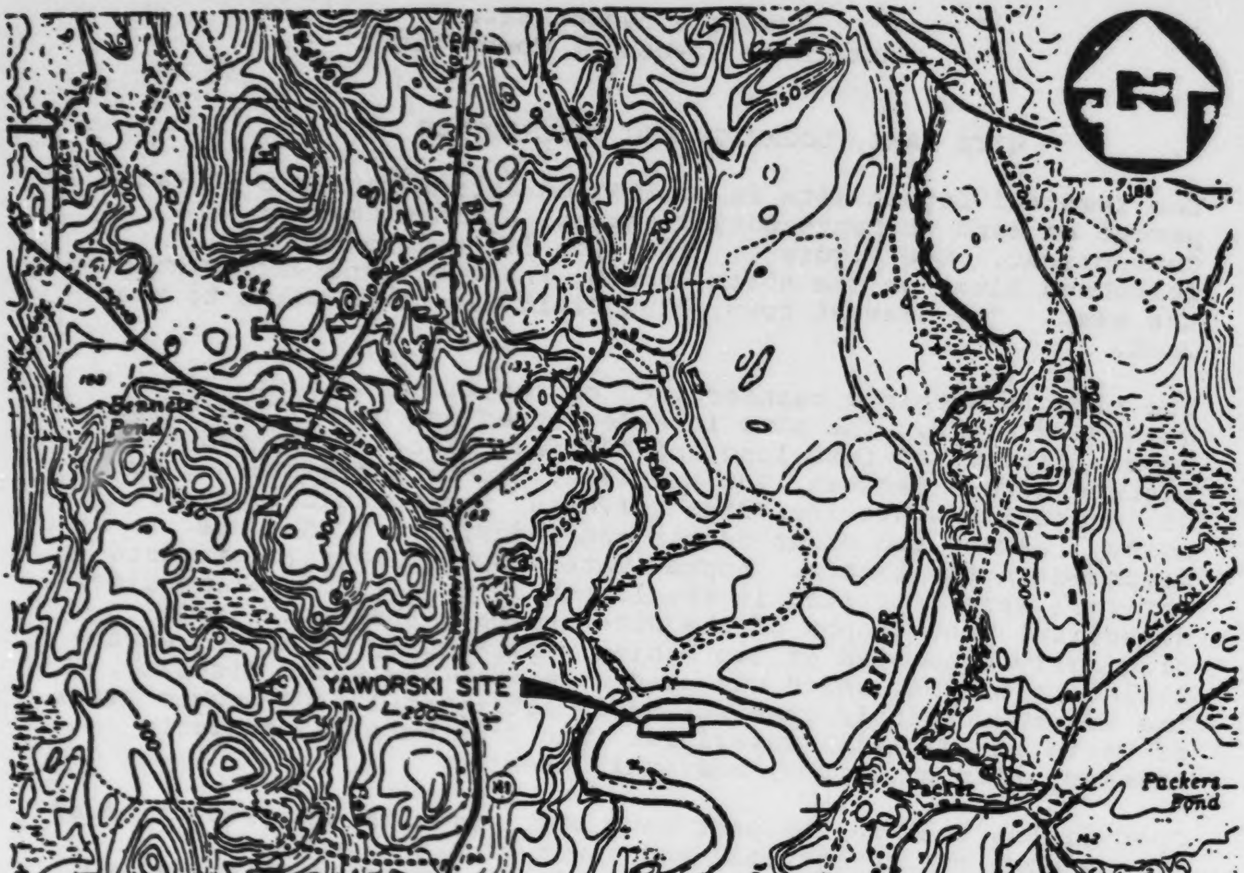
Open fields that in the past have been used for the production of silage corn are to the east and south of the lagoon. Approximately 2000 feet southeast of the lagoon is an operating solid waste landfill owned by James Yaworski, the same individual who operated the Yaworski Lagoon. See Figure 1. A more complete description of the site can be found in the Remedial Investigation Report prepared by NUS Corporation (NUS) in 1986 and in the supplemental Remedial Investigation Report prepared by Ebasco Services Incorporated (EBASCO) in July 1988.

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

A. Response History

Flammable waste was periodically burned at the site until 1965 when the Connecticut Department of Health ordered a halt to on-site burning of waste. The combined efforts of local residents and state and local officials concerned about adverse human health and environmental effects from disposal operations at the lagoon led to the end of all dumping at the lagoon in 1973.

In 1976, the Connecticut Department of Environmental Protection (CT DEP) directed James Yaworski to install a series of


N
YAWORSKI SITE
RIVER
Brook
Packers Pond
Packer
Pond
QUINEBAUG
200
250
300
150

BASE MAP IS A PORTION OF THE U.S.G.S. PLAINFIELD, CT QUADRANGLE (7.5 MINUTE SERIES, 1953, PHOTOREVISED 1970). CONTOUR INTERVAL 10'.

FIGURE 1

LOCATION MAP

monitoring wells adjacent to the lagoon and to assess the environmental hazards posed by the site. As a result of these actions, ground water contamination was detected. In 1980, CT DEP ordered Mr. Yaworski to employ a professional engineering firm to conduct an environmental study of the property. The engineering firm concluded that most of the contaminants had migrated from the lagoon, and recommended closing the lagoon by covering the waste. In May 1982, CT DEP ordered Mr. Yaworski to close the lagoon in accordance with the engineering firm's report and Mr. Yaworski agreed to carry out this Order. Subsequently, Mr. Yaworski covered the lagoon with paper, rags, rubble and soil.

In 1984, the site was added to the National Priorities List, EPA's list of top priority hazardous waste sites, thus making it eligible to receive federal funds for investigation and cleanup under the Superfund program. NUS completed the initial Remedial Investigation for EPA in April 1986. Ground water and soil samples taken from areas immediately adjacent to the lagoon revealed the presence of volatile organic compounds (VOCs).

The initial Remedial Investigation at the Yaworski Lagoon site also concluded that several areas needed further study before a cleanup decision could be made. Therefore, in 1987 and 1988, EPA conducted a supplemental Remedial Investigation to obtain further details about the nature and extent of contamination in the lagoon and beneath it; to determine the condition of the dike surrounding the lagoon and the impact of flood events; to ascertain the impact of the lagoon on the adjacent wetlands; to evaluate ground water contamination, if any, across the Quinebaug River; and to study the impact of the active Yaworski landfill on ground water quality in the lagoon area.

A more detailed description of the response history can be found in the initial Remedial Investigation Report completed by NUS and the supplemental Remedial Investigation Report prepared by Ebasco.

B. Enforcement History

On November 10, 1983, EPA notified Yaworski, Inc., an owner and operator of the facility of its potential liability with respect to the site. Five parties who either generated wastes that were shipped to the facility, arranged for the disposal of wastes at the facility, or transported wastes to the facility were notified of their potential liability with respect to the site on June 10, 1987. Negotiations commenced with these potentially responsible parties (PRPs) shortly thereafter regarding the settlement of the PRPs' liability at the site, after which the PRPs formed a steering committee. EPA subsequently identified three additional PRPs. Although special notice has not yet been issued at this site, EPA anticipates that substantial negotiations will take place during the end of 1988 and the beginning of 1989.

The PRPs have been active in the remedy selection process for this site. In the fall of 1987, the PRPs submitted comments on EPA's decision to conduct additional sampling and analysis of the lagoon contents, to obtain a more in depth view of the site hydrogeology, and to investigate the Yaworski solid waste landfill's effect on site ground water. On June 21, 1988, the PRPs submitted comments to EPA on the potential risks associated with the implementation of an excavation and incineration alternative. Several representatives of the PRPs also attended the public informational meeting held on July 27, 1988 and the public hearing on August 17, 1988, although they did not place any oral comments into the record. The PRPs, however, did submit additional written comments on the supplemental Remedial Investigation and the Feasibility Study (RI/FS) and Proposed Plan during the public comment period. EPA's responses to the significant comments are contained in the Responsiveness Summary.

III. COMMUNITY RELATIONS

The local community has had an active and at times quite vocal presence throughout the site's history. EPA has kept the community and other interested parties apprised of the site activities through informational meetings, fact sheets, press releases, and public meetings.

On October 29, 1983, EPA issued a press release and solicited comment on the Remedial Action Master Plan (RAMP). On December 11, 1984, EPA held an informational meeting in Canterbury, Connecticut to describe the Work Plan for the initial Remedial Investigation. In June 1985, EPA released the Yaworski Lagoon site Community Relations Plan, which outlined the program that the Agency intended to implement in order to address community concerns and keep citizens informed and involved during the conduct of remedial activities. On May 21, 1986, EPA held a public meeting to discuss the results of the initial Remedial Investigation. On March 16, 1987, EPA issued a press release and made available a plan that delineated additional investigations to further characterize the nature and extent of contamination at the site. The results of these additional investigations are embodied in the supplemental Remedial Investigation Report and the analyses of remedial alternatives are embodied in the Feasibility Study Report. These reports were issued in July 1988.

The Agency published a notice and brief analysis of the Proposed Plan in the Norwich Bulletin on July 20, 1988 and made the Proposed Plan and the Administrative Record available to the public at the Town of Canterbury, Connecticut Public Library on July 27, 1988. On July 27, 1988, EPA also held an informational meeting to discuss the results of the supplemental Remedial Investigation and the cleanup alternatives analyzed in the Feasibility Study, presented the Agency's Proposed Plan for the cleanup of the site, and answered questions from the public. From July 28, 1988 until August 24, 1988, the Agency held a four week comment period to accept public comment on the Proposed Plan, on the alternatives presented in the Feasibility Study Report, and on other documents that were contained in the Administrative Record. On August 17, 1988, the Agency held a public hearing to accept oral comments. A transcript of the oral comments read into the record was made. A summary of the comments submitted by the public and the EPA's response to those comments are included in the attached Responsiveness Summary.

IV. SCOPE AND ROLE OF THE RESPONSE ACTION

The selected remedy is a comprehensive approach to site remediation that combines components of source control and management of migration. In sum, waste in the lagoon will be contained by an impermeable cap that complies with the Resource, Conservation and Recovery Act (RCRA) and other applicable or relevant and appropriate environmental laws, the dike around the lagoon will be improved to ensure that the dike can withstand floods, a ground water protection standard known as Alternate Concentration Limits (ACLs) will be established, and monitoring will be conducted to ensure that the ACLs are not exceeded. These actions will ensure that site contaminants do not pose a threat to human health or the environment. The selected cleanup approach is discussed in more detail in Section X.

V. SITE CHARACTERISTICS

The significant findings of the Remedial Investigations completed in 1986 and 1988 are reviewed briefly below. A complete discussion of site characteristics can be found in those Reports.

Nature and Extent of Contamination In the Lagoon

The lagoon contains approximately 65,000 cubic yards of highly contaminated sludge covered by an additional 60,000 cubic yards of contaminated debris. The sludge is a mixture of water, dirt, VOCs, semi-volatile organic compounds (SVOCs), and heavy metals See Table 1. Organic compounds in the percent range (i.e., above 10,000 ppm) include 2-butanone, 4-methyl-2-pentanone, carbon tetrachloride, total xylenes, 1,1,1-trichloroethane, toulene, ethylbenzene, bis(2-ethylhexyl) phthalate, butylbenzylphthalate, and di-n-octylphthalate. Additionally, a number of heavy metals, including chromium, lead, and nickel, are found at concentrations above 1000 ppm.

The debris covering the sludge consists of dirt, rags, trash, and construction materials. It is saturated with contaminated water that is perched above the sludge. This contaminated debris adds a significant amount of material to be managed and complicates any possible excavation of the underlying lagoon sludge.

Condition of the Present Cover and Dike

The present cover over the lagoon and the dike that surrounds it are inadequate to protect against erosion and flooding and do not stop rainwater from washing through the waste in the lagoon. Around the western and southern perimeter of the lagoon, the dike is nonexistent at some points and rises to a maximum of only five feet above the surrounding ground surface. Some riprap (boulders and construction debris used as erosion control) is present on the dike slopes at the northern and eastern sides of the lagoon; however, the thickness and composition of the riprap is highly variable and contains a large amount of construction debris and does not provide adequate erosion or flood protection.

Under current site conditions, heavy rainfall or flooding may cause erosion of the existing cover and dike. Various portions of the cover and dike currently have little or no protection against erosion. This is particularly evident at the west end of the lagoon where surface seeps are prevalent.

Ground Water Contamination

Contaminants from the lagoon sludge dissolve directly into ground water below the lagoon and are washed into the ground water by rainwater that flows through the debris and soil cap that covers the waste. The washing of contamination from the lagoon by rainwater is the primary cause of contaminant transport to ground water.

Contaminants in ground water include elevated levels of VOCs, SVOCs, and metals. See Table 2. The concentrations exceed drinking water standards for those compounds.

Table 1

YAVORSKI LAGOON SLUDGE CONTAMINATION

VOLATILE ORGANIC COMPOUNDS

Contaminant	Concentration Range (ppm)	Detection Frequency
Methylene Chloride	62-410	5/11
Acetone	127.8-133	2/11
1.1-Dichloroethene	310-560	2/11
Trans-1.2-Dichloroethene	8.4-250	3/11
Chloroform	15-125	4/11
1.2-Dichloroethane	125	1/11
2-Butanone	368.2-72.000	9/11
1.1,1-Trichloroethane	126.4-15.000	10/11
Carbon Tetrachloride	47.6-4.100	2/11
Vinyl Acetate	95-274	1/11
Trichloroethane	700	1/11
1,1,2-Trichloroethane	49	1/11
Benzene	17-56	3/11
4-Methyl-2-Pentanone	56.6-3.100	7/11
Tetrachloroethene	75-91	3/11
Toluene	56.5-12.000	10/11
Ethylbenzene	149.8-11.000	10/11
Total Xylenes	772.2-44.000	10/11
Tetrahydrofuran	170-820	6/11

SEMI-VOLATILE ORGANIC COMPOUNDS

Contaminant	Concentration Range (ppm)	Detection Frequency
Naphthalene	82-220	3/11
2-Methylnapththalene	14-33	2/11
Acenaphthene	1.9	1/11
Phenanthrene	100	1/11
Anthracene	28	1/11
Fluoranthene	91	1/11
Pyrene	87	1/11
Butylbenzylphthalate	210-18.000	8/11
bis(2-Ethylhexyl)Phthalate	970-83,000	7/11
Chyrsene	45	1/11
Di-n-Octyl Phthalate	600-2,700	7/11
Benzo (b) Fluoranthene	19	1/11
Benzo (k) Fluoranthene	28	1/11
3,3'-Dichlorobenzidine	800	1/11
Benzo (a) Anthracene	400	1/11

Table 1 (continued)

YAVORSKI LAGOON SLUDGE CONTAMINATION

INORGANIC COMPOUNDS

Contaminant	Concentration Range (ppm)	Detection Frequency
Arsenic	3.8-5.9	3/8
Barium	147-723	8/8
Cadmium	100-769	8/8
Chromium	34-9,130	8/8
Lead	42.9-6.290	8/8
Mercury	2.3-89	7/8
Silver	3.6-6.4	3/8
Copper	23-872	8/8
Nickel	12-9,310	8/8
Zinc	169-1.820	8/8
Thallium	2.2	1/8
Cyanide	0.73-0.81	2/8

PESTICIDES/PCB

Contaminant	Concentration Range (ppm)	Detection Frequency
Aroclor-1254	2.2-28.6	6/11

Table 2

YAVORSKI LAGOON SITE GROUNDWATER CONSTITUENTS

VOLATILE ORGANIC COMPOUNDS

	September/October 1985 (NUS)		February 1988		June 1988	
Contaminant	Concentration Range (ppm)	Detection Frequency	Concentration Range (ppm)	Detection Frequency	Concentration Range (ppm)	Detection Frequency
Chloroethane	0.003-0.730	7/21	0.032-0.15	3/14	0.22	1/9
Methylene Chloride	0.1-0.44	3/21	0.51	1/14	0.001-0.053	4/9
Acetone	0.39-1.3	2/21	7.9-140.0	3/14	0.005-78.0	6/9
1.1-Dichloroethene	1.7	1/21	0.026	1/14	0.18	1/9
2-Butanone	0.025-660.0	6/21	0.013-1.300	9/11	0.029-16.000	8/9
4-Methyl-2-Pentanone	0.003-67.0	6/21	13.0-48.0	2/14	0.074-72.0	5/9
Toluene	0.002-5.5	8/21	1.6	1/14	0.035-2.6	5/9
Ethylbenzene	0.004-10.0	7/21	2.8	1/14	0.07-3.9	6/9
Total Xylenes	0.002-42.0	12/21	0.4-66.0	7/14	0.001-44.0	7/9
Tetrahydrofuran	0.015-47.0	13/21	0.008-47.0	8/14	0.088-330.0	7/9
Vinyl Chloride	ND	0/21	ND	0/14	0.046	1/9
1.1-Dichloroethane	1.7	1/21	ND	0/14	0.011-1.1	5/9
Tr[illegible]1,2-Dichloroethene	ND	0/21	ND	0/14	0.024-0.098	2/9
1.1.1-Trichloroethane	ND	0/21	ND	0/14	4.0	1/9
Trichloroethene	ND	0/21	ND	0/14	0.06-0.029	2/9
Benzene	0.004-0.01	2/21	ND	0/14	0.005-0.2	4/9
2-Hexanone	ND	0/21	ND	0/14	0.012-0.030	2/9
Tetrachloroethene	0.23	1/21	ND	0/14	0.04	1/9
Carbon Disulfide	ND	0/21	ND	0/14	0.019	1/9

SEMI-VOLATILE ORGANIC COMPOUNDS

	September/October 1985 (NUS)		February 1988		June 1988	
Contaminant	Concentration Range (ppm)	Detection Frequency	Concentration Range (ppm)	Detection Frequency	Concentration Range (ppm)	Detection Frequency
Phenol	0.053	1/21	0.011-2.9	4/14	0.002-0.49	7/9
Naphthalene	0.004-0.084	6/21	0.028-0.072	2/14	0.054-0.060	2/9
2-Methylphenol	ND	0/21	0.016-0.064	2/14	0.036	1/9
4-Methylphenol	0.035	1/21	0.010-0.99	4/14	0.014-0.3	2/9
2,4-Dimethylphenol	ND	0/21	0.045-0.25	7/14	0.05	1/9
Benzoic Acid	0.19-0.38	2/21	0.75-10.0	3/14	0.35	1/9
bis(2-Ethylhexyl)Phthalate	0.004-0.007	4/21	0.012-0.051	2/14	0.011	1/9
Benzyl Alcohol	ND	0/21	ND	0/14	2.3	1/9
di-n-octyl phthalate	0.001	1/21	ND	0/14	ND	0/9
B[illegible]lbenzyl phthalate	0.004-0.006	3/21	ND	0/14	ND	0/9

Table 2 (continued)

YAWORSKI LAGOON SITE GROUNDWATER CONSTITUENTS

INORGANIC COMPOUNDS

Contaminant	February 1988* Concentration Range (ppm)	Detection Frequency	Background Well Range (ppm)
Aluminum	417-650	2/14	2710
Arsenic	13-65	6/14	—
Barium	240-263	2/14	—
Cadmium	10-47	6/14	—
Calcium	12,400-160,000	14/14	79.800
Chromium	10	1/14	154
Cobalt	62	1/14	—
Copper	12-808	6/14	81.9 -
Cyanide	11	1/14	—
Iron	141-165.000	14/14	15.600
Lead	ND	0/14	21.5
Magnesium	5,460-32.600	10/14	6.620
Manganese	53-20.100	14/14	181
Mercury	0.2	1/14	—
Nickel	44-110	3/14	112
Potassium	5,300-9,700	8/14	9510
Silver	ND	0/14	—
Sodium	5,560-81,200	14/14	39.400
Zinc	54-122	5/14	182

* (NOTE: Groundwater not anlayzed for inorganics in June 1988.
Inorganic data from September/October 1985 (NUS) not included.)

PESTICIDES/PCB

Contaminant	February 1988* Concentration Range (ppm)	Detection Frequency
4,4'-DDT	0.11-0.12	2/14
Endrin	2.6	1/14
Heptachlor Epoxide	ND	0/14

* (NOTE: Groundwater not analyzed for Pesticides/PCBs in June 1988.
Pesticides/PCB data from September/October 1985 (NUS) not included.)

Ground water generally flows and recharges into the Quinebaug River. The river acts as a hydraulic barrier to ground water flow to areas beyond the river meander.

Quinebaug River

The concentration of some contaminants in the Quinebaug River exceed their Ambient Water Quality Criteria at points both upstream and downstream from the site. However, the results of surface water and sediment benthic organism sampling conducted by EPA indicate that presently there is no increase in contaminant levels in the river that can be attributed to the Yaworski Lagoon.[1]

The Quinebaug River's large volume also attenuates contamination so no measurable increase in levels are observed. Although levels of several metals are elevated in the river, these levels are generally no higher than background levels upstream and downstream from the lagoon.

Wetlands

Contamination from the lagoon seeps through the dikes into the wetlands. Wetland organisms may suffer from the presence of metals such as cadmium, chromium, copper, and lead. In addition, wildlife may be exposed to contaminants in the leachate and wetland surface water and sediments. The primary transport pathways appear to be leachate flow from the lagoon, erosion of contaminated seep sediments and surface soils, and dissolution of contaminants into surface runoff from soils and sediments.

Future Well Development Across the Quinebaug River

Hydrological conditions are not suitable for development of large volume water supplies (e.g., a municipal system) across the river because the soil's hydraulic conductivity and resulting potential yield of water is low.

Yaworski Solid Waste Landfill

The operating solid waste landfill contributes VOCs, SVOCs, and metals to ground water, but, based on monitoring conducted by EPA in 1988, the contamination was found to be at substantially lower levels than contributed by the sludge lagoon.

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[1] Fish sampling conducted by the potentially responsible parties at the site also supports this conclusion.

VI. SUMMARY OF SITE RISKS

The potential adverse human health and environmental effects from exposure to contaminants at the site were estimated and summarized in the Public Health and Environmental Risk Evaluation, Section 6 of the supplemental Remedial Investigation Report. Incremental lifetime cancer risks and the potential for non-carcinogenic adverse health effects were estimated for exposure to contaminated soils, sediments, and ground water. These adverse health effects are summarized in Table 3.

Table 3

	Non-Carcinogenic Risks				Carcinogenic Risks			
Media	Most Probable		Realistic Worst		Most Probable		Realistic Worst	
	Adult	Child	Adult	Child	Adult	Child	Adult	Child
Groundwater	5.4	10.9	145	290	2.4×10^{-4}	3.5×10^{-5}	5.2×10^{-3}	1.5×10^{-3}
Surface Water	N/C		0.6		N/C		2.7×10^{-8}	
Leachate Sediment	N/C		0.2		N/C		5.5×10^{-6}	

These estimates of the adverse health effects are based on an evaluation of the most toxic, mobile, and persistent chemicals found at the site. These chemical include both carcinogens and non-carcinogens, such as volatile organic, semi-volatile organic and inorganic compounds. Present and future potential exposure pathways, including dermal contact with soil and sediments, ingestion of fish, ingestion of ground water, and dermal contact with leachate were investigated and the risks associated with these pathways were quantified. The estimates of risk are presented for the average-case and worst-case scenarios. The average-case scenario represents the most probable risk that the exposure may be causing. The worst-case is a very conservative estimate that assumes all exposure occurs at the highest contaminant concentrations that were measured.

Although contaminated ground water is not currently being consumed, ingestion of ground water would result in risks that exceed EPA's target range for incremental lifetime cancer risks of from 10^{-4} to 10^{-7} and exceed acceptable reference doses for exposure to non-carcinogens. For carcinogens, the ingestion may pose an incremental lifetime cancer risk of from 2.4×10^{-4} (average-case) to 5.2×10^{-3} (worst-case). Arsenic, benzene, and tetrachloroethylene cause most of this risk. For non-carcinogens, drinking ground water would result in a hazard index[2] for 2-butanone from 5 (average-case) to 139 (worst-case). The hazard indices for acetone, lead, and cadmium were just over one under the worst-case scenario.

In addition to risks posed by exposure to ground water, dermal contact with contaminated leachate and sediments pose, under the worst-case scenario, an incremental lifetime cancer risk of 5.5×10^{-6}. The non-carcinogenic hazard index, however, was less than one and, therefore, risk from dermal contact to non-carcinogens is not significant.

The ingestion of fish would not cause unacceptable carcinogenic or non-carcinogenic risks.

In addition to the risks posed to human health, contamination from the site poses a threat to the environment. Concentrations of cadmium, chromium, copper, lead, and zinc in the wetland near the site exceed chronic and acute Ambient Water Quality Criteria and ecotoxicity criteria. This contamination is due to leachate flow from the lagoon and erosion of contaminated sediments. In addition to chemical contamination, erosion from the lagoon contributes to sedimentation of the wetlands and decreases the wetlands' flood storage capacity and potential as a habitat. Also, continued erosion and leachate from the lagoon could adversely impact the Quinebaug River.

VII. DOCUMENTATION OF NO SIGNIFICANT CHANGES

EPA adopted a Proposed Plan (preferred alternative) for remediation of the site on July 27, 1988. The selected remedy does not differ significantly from the preferred alternative.

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[2] Risk for a non-carcinogenic compound is represented by a Hazard Index. A Hazard Index is the ratio of (the contaminant concentration at which exposure of a compound occurs) to (EPA's acceptable reference dose for the compound). A value greater than one indicates that exposure is at a concentration greater than the acceptable reference dose and thus, may be significant.

VIII. DEVELOPMENT AND SCREENING OF ALTERNATIVES

A. Statutory Requirements

Prior to the passage of the Superfund Amendments and Reauthorization Act of 1986 (SARA), actions taken in response to releases of hazardous substances were conducted in accordance with CERCLA as enacted in 1980 and the revised National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300, dated November 20, 1985. Until the NCP is revised to reflect SARA, the procedures and standards for responding to releases of hazardous substances, pollutants and contaminants shall be in accordance with Section 121 of CERCLA and to the maximum extent practicable, the current NCP.

Under its legal authorities, EPA's primary responsibility at Superfund sites is to undertake remedial actions that are protective of human health and the environment. In addition, Section 121 of CERCLA establishes several other statutory requirements and preferences, including: a requirement that EPA's remedial action, when complete, must comply with applicable or relevant and appropriate environmental standards, requirements, criteria and limitations (ARARs) established under federal and state environmental laws unless a statutory waiver is invoked; a requirement that EPA select a remedial action that is cost-effective and that utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and a statutory preference for remedies that permanently and significantly reduce the volume, toxicity, or mobility of hazardous substances over remedies that do not achieve such results through treatment. The remedial alternatives developed for the Yaworski Lagoon site are consistent with these Congressional mandates.

Section 121(b)(1) of CERCLA presents several factors that at a minimum EPA is required to consider in its assessment of alternatives. In addition to these factors and the other statutory directives of Section 121, the evaluation and selection process was guided by the EPA document "Additional Interim Guidance for FY '87 Records of Decision" dated July 24, 1987. This document provides direction on the consideration of SARA cleanup standards and sets forth nine factors that EPA should consider in its evaluation and selection of remedial actions. The nine factors are:

1. Compliance with ARARs.

2. Long-term Effectiveness and Permanence.

3. Reduction of Toxicity, Mobility, or Volume.

4. **Short-term Effectiveness.**

5. **Implementability.**

6. **Community Acceptance.**

7. **State Acceptance.**

8. **Cost.**

9. **Overall Protection of Human Health and the Environment.**

B. Response Objectives

Response objectives were developed to mitigate existing and future threats to public health and the environment. The response objectives developed for the Yaworski Lagoon site are to:

1. minimize exposure to contaminated ground water;

2. ensure that contamination from the lagoon does not adversely impact the Quinebaug River;

3. protect environmental receptors in the wetlands;

4. minimize exposure to contaminated leachate seeps; and

5. attain ARARs.

C. Technology and Alternative Development and Screening

The evaluation and screening of remedial alternatives for the site was conducted in accordance with CERCLA, the NCP, and EPA guidance documents, including the "Interim Guidance on Superfund Selection of Remedy" [EPA Office of Solid Waste and Emergency Response (OSWER)], Directive No. 9355.0-19 (December 24, 1986). Treatment alternatives were developed to address the five objectives listed above. In addition to treatment alternatives, containment options and a minimal/no-action alternative were developed.

After setting response objectives, EPA developed and evaluated potential cleanup alternatives for the Yaworski Lagoon site to address those objectives. The Feasibility Study Report for the site describes the alternatives considered, as well as the process and criteria EPA used to narrow the list to six potential remedial alternatives.

A three-step process was followed in the Feasibility Study. First, technologies were identified, assessed, and screened based on their ability to be effective, implementable, and to address the response objectives developed for the site. This technology screening is summarized in Chapter 9 of the Feasibility Study Report.

The highly contaminated sludge that is found in the Yaworski Lagoon and the contaminated debris that covers the site greatly limited the number of effective, implementable technologies. EPA concluded that containing the wastes in the lagoon or incinerating the lagoon contents would be the only viable technologies. A discussion of why other types of treatment technologies would not be effective or implementable is in Chapter 9 of the Feasibility Study Report. For ground water, an ACL demonstration and pumping and treating ground water were identified as effective, implementable technologies.

The viable technologies identified for the lagoon contents and ground water remediation were then combined to form six remedial alternatives. Only six alternatives where developed because of the limited number of technologies available.[3]

Finally, the six alternatives were evaluated in detail against the nine criteria listed above. This detailed evaluation is summarized in Chapter 10 of the Feasibility Study Report.

IX. DESCRIPTION/SUMMARY OF THE DETAILED AND COMPARATIVE ANALYSIS OF ALTERNATIVES

This section presents a narrative summary and brief evaluation of each alternative according to the nine evaluation criteria described above. The alternatives address both contaminants that remain on-site in the lagoon and contaminants that have migrated from the lagoon. A detailed tabular assessment of the alternatives can be found in Table 10.1 of the Feasibility Study Report.

Alternative # 1: Minimal/No-Action. This alternative would require EPA to enclose the lagoon with a 6-foot high chain link fence.

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[3] At this point in the remedy selection process, an initial screening, to narrow the number of alternatives to a manageable number for further detailed analysis, is usually conducted. However, because only six alternatives were developed, this initial screening was not necessary.

This alternative would not be protective of human health and the environment because it does not address the contaminated leachate seeps, include enforceable ground water protection standards or controls, or address the potential impacts of flood events. Furthermore, this alternative does not attain ARARs. Although the minimal/no-action alternative does not meet CERCLA requirements, it was evaluated in detail in the Feasibility Study to serve as a baseline for comparison with the other remedial alternatives under consideration.

ESTIMATED TIME FOR CONSTRUCTION:	1 Year
ESTIMATED TIME FOR OPERATION:	30 years of maintenance
ESTIMATED TOTAL COST:	$315,000

Alternative # 2: Minimal/No-Action for Lagoon Sludge with an ACL Demonstration for Ground water. Alternative # 2 would set ACLs as the ground water protection standard but would not include any containment or treatment measures for the lagoon source, other than fencing.

Although ACLs would address the ground water protection requirements, the alternative would not be protective because the contaminated leachate seeps would continue to impact the wetlands. Furthermore, this alternative would not meet ARARs for flood protection or closure of the lagoon.

ESTIMATED TIME FOR CONSTRUCTION:	1 year
ESTIMATED PERIOD OF OPERATION:	30 Years of Monitoring
ESTIMATED TOTAL COST:	$1,566,000

Alternative # 3: Improved Capping and Dike, and Setting an ACL as the Ground Water Protection Standard This alternative is the selected remedy for the site and is discussed in Section X.

Alternative # 4: Improved Cap and Dike for Lagoon Sludge with Ground water Treatment by Ultraviolet (UV)/Ozonation. Alternative # 4 combines improving the cap and dike as described under the selected remedy in Section X with treatment of ground water by UV/Ozonation. Under this alternative, contaminated ground water would be pumped out of the ground into an on-site facility and treated to reduce the contaminants in the ground water. After the ground water is treated by this process, it would be released back to the site aquifer.

This alternative would be protective of human health and the environment and would attain all ARARs, including those for floodplains and wetlands.

This alternative was not selected because it would be more expensive, but no more protective, than the selected remedy given site conditions. Ground water contamination is contained within the Quinebaug River meander and enforceable measures to restrict ground water consumption at the site can be implemented. Moreover, it is not technically feasible to achieve drinking water standards without treatment of the waste in the sludge lagoon. Treatment of ground water is thus not necessary as long as it is demonstrated that no statistically significant increase in contaminants entering or accumulating downstream in the Quinebaug River is occurring.

ESTIMATED TIME FOR CONSTRUCTION:	2 years
ESTIMATED PERIOD OF OPERATION:	30 years of monitoring and treatment
ESTIMATED TOTAL COST:	$4,159,000

Alternative # 5: On-site Incineration of Excavated Sludge with an ACL as the Ground Water Protection Standard. Alternative # 5 would combine excavation and on-site incineration with an ACL demonstration as described under the selected remedy. This alternative would first involve removing the contaminated soil and debris from above the lagoon wastes, then excavating the lagoon contents and incinerating the contaminated soil, debris, and lagoon contents in an on-site incinerator. The incinerator would consist of an on-site mobile treatment unit equipped with air pollution control equipment. Ash resulting from the incineration process would be managed in accordance with appropriate Resource Conservation and Recovery Act (RCRA) requirements. After removal and incineration of contaminated material, the lagoon area would be backfilled with clean soil.

This alternative would be protective of human health and the environment, attain ARARs, and satisfy the statutory preference for treatment-based remedies that reduce the toxicity, mobility, or volume of the wastes.

This alternative, however, would not be effective in the short-term because of the potential for significant air emissions during waste excavation.

Further, this alternative would be difficult to implement at the site. Siting a treatment facility and excavating large quantities of contaminated wastes in a floodplain require extraordinary care.

Finally, this alternative is much more expensive than the selected remedy and yet would not result in the reduction of contaminants in ground water to drinking water standards.

ESTIMATED TIME FOR CONSTRUCTION:	**2 years**
ESTIMATED PERIOD OF OPERATION:	**3 years to operate incinerator; 30 Years of Monitoring**
ESTIMATED TOTAL COST:	**$100,984,000**

Alternative # 6: On-site Incineration of Excavated Sludge with Ground water Treatment By UV/Ozonation. This alternative would combine on-site incineration of lagoon sludge as described under Alternative # 5 with ground water treatment by UV/Ozonation as described under Alternative # 4.

This alternative would be protective of human health and the environment, attain ARARs, and satisfy the statutory preference for treatment-based remedies that reduce the toxicity, mobility, or volume of the wastes. This alternative would also significantly reduce contamination in the ground water.

This alternative, like Alternative # 5, however, would not be effective in the short-term, would be very difficult to implement, and is much more expensive than the selected remedy. Further, even in the event that source and ground water treatment could decrease contaminant levels in the aquifer below drinking water standards, the hydrology of the aquifer is not conducive to sinking a large capacity municipal well.

ESTIMATED TIME FOR CONSTRUCTION:	**2 years**
ESTIMATED PERIOD OF OPERATION:	**3 years to operate incinerator; 30 years of treatment and monitoring**
ESTIMATED TOTAL COST:	**$101,790,000**

X. THE SELECTED REMEDY

The selected remedy is a comprehensive approach to site remediation that combines components of source control and management of migration.

A. Description of the Selected Remedy

EPA's selected remedy is to contain the lagoon waste by constructing an impermeable cap and improving the dike around the lagoon to ensure that the cap and dike can withstand floods. EPA will also establish ACLs to ensure that contaminants in ground water do not pose a threat to human health or the environment. The selected cleanup approach is discussed in more detail below.

1. Lagoon Closure - Improved Cap and Dike

The contaminated sludge in the Yaworski lagoon will be contained by installing a cover, or "cap," over the lagoon and reinforcing the earthen dike that surrounds the filled lagoon. The cover will be designed, constructed, and maintained to comply with RCRA. RCRA landfill closure requirements include 40 C.F.R. § 264.310 and RCRA location standards for facilities in floodplains, 40 C.F.R. § 264.18. Specifically, under 40 C.F.R. § 264.310, the cover will be designed and constructed to:

a. Provide long-term minimization of migration of liquids through the closed lagoon.

b. Function with minimum maintenance.

c. Promote drainage and minimize erosion or abrasion of the cover.

d. Accommodate settling and subsidence so that the cover's integrity is maintained.

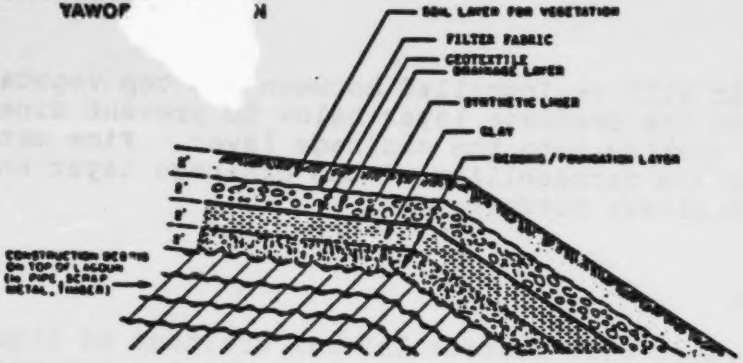
e. Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.

Additionally, to meet the location requirement for facilities in floodplains, the cover and dike that will surround the lagoon will also be designed, operated, and maintained to prevent washout by a 100-year flood.

To meet the requirements outlined above, a multi-component cover system will be implemented. See Figure 2.

The cover will contain both a synthetic liner and a low-permeability soil layer to ensure that it provides long-term minimization of migration of liquids through the waste in the lagoon; the liner or the low-permeability soil layer alone would not provide adequate protectiveness. Having two components ensures that should one fail, the other will continue to minimize the migration of liquids through the waste.

FIGURE 2
RCRA CAP CROS[illegible]ECTION
YAWOR[illegible]N


SOIL LAYER FOR VEGETATION
FILTER FABRIC
GEOTEXTILE
DRAINAGE LAYER
SYNTHETIC LINER
CLAY
BEDDING / FOUNDATION LAYER
2'
2'
2'
2'
CONSTRUCTION DEBRIS ON TOP OF LAGOON (ie PIPE, SCRAP METAL, LUMBER)

Each component of the cover is described below along with a discussion of its function. The particular materials specified below for each component serve as the basis for subsequent remedial design and remedial action. However, other materials or specifications may be utilized if EPA determines that they satisfy the various goals described below or improve on the overall effectiveness of the remedy.

The description of the cover follows EPA's guidance "Covers for Uncontrolled Hazardous Waste Sites," (EPA/540/2-85/002) and takes into account site-specific conditions. The guidance ensures that the final cover will meet the RCRA requirements under 40 C.F.R. § 264.310.

Vegetated Top Cover

The vegetated top cover will, at a minimum, be two feet thick. A suitable soil type will be utilized that contains nutrients, water content, and other properties to support vegetation that minimizes erosion without continued maintenance. The cover will be planted with a stabilizing grass mixture that does not have a root system that penetrates beyond the vegetative and drainage layers.

The slope of the final vegetative cover, after settling and subsidence, will be maintained at between three and five percent to promote drainage and minimize erosion to less than 2 tons/acre/year, based on the USDA Universal Soil Loss Equation. The vegetated top cover also will conduct runoff across the cap with no backup, retention or ponding of water and will have a top surface that is capable of withstanding flood water velocities of at least 4 feet/second.

Filter Fabric

A filter fabric will be installed between the top vegetative cover layer and the drainage layer below to prevent fine soil material from washing into the drainage layer. Fine material could decrease the permeability of the drainage layer and decrease its drainage performance.

Drainage Layer

The drainage layer will promote lateral drainage of liquids off of the cover. It will be two feet thick, have a saturated hydraulic conductivity of not less than $1x10^{-3}$ cm/sec, and have a bottom slope of at least two percent to ensure adequate drainage. The saturated hydraulic conductivity of the material used for the drainage layer will be confirmed by appropriate testing. The two-foot drainage layer, in combination with the two-foot vegetative layer above, will provide frost protection for the liner and low-permeability soil layer below.

Geotextile

A geotextile will be placed below the drainage layer to provide abrasion and puncture protection for the synthetic liner.

Synthetic Liner

The synthetic liner will be high density polyethylene or chlorosulfonated polyethylene of at least 40-mil thickness. These liner materials were selected from among other liner materials because they provide the best chemical resistance and have an acceptable yield point in elongation (stretching capacity) for application to the Yaworski lagoon. Chemical resistance is important because of the high concentration of solvents found in the sludge material in the lagoon. Polyvinyl chloride (PVC) and chlorinated polyethylenes do not have adequate chemical resistance. A minimum of a 40-mil thickness was selected to provide adequate puncture and abrasion protection and protection against chemical degradation. During installation of the liner, appropriate quality assurance procedures will be followed.

Low-Permeability Soil Layer

The low-permeability soil layer will, at a minimum, be two feet thick. The material used for this layer will be installed in lifts not to exceed 6-inches before compaction. It will have an in-place saturated hydraulic conductivity of less than $1x10^{-7}$ cm/sec. The saturated hydraulic conductivity will be confirmed by laboratory testing on field-compacted samples, by in-place infiltrometer testing, and by correlation to moisture content and density.

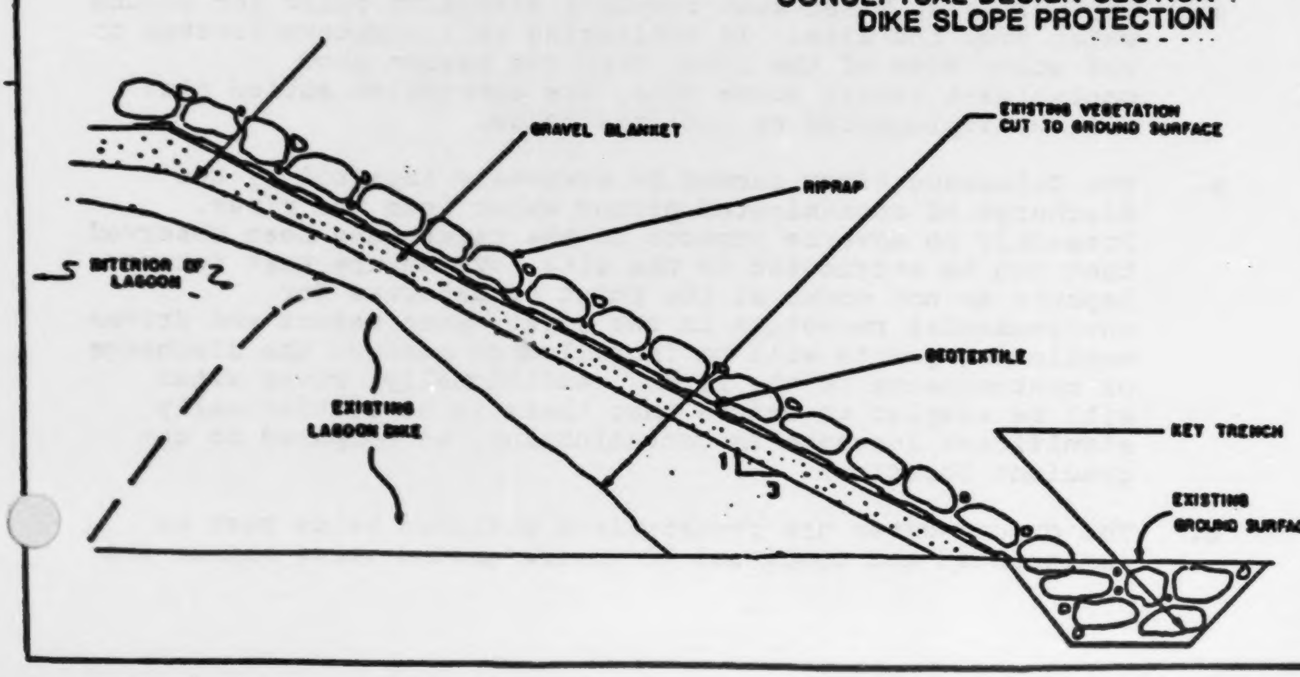
Bedding/Foundation Layer

At a minimum, a two-foot thick bedding/foundation layer of soil will be installed on the existing cap to provide a suitable base for the low-permeability layer above and to cover any protruding construction debris. This layer will also protect the layers above from puncturing.

Dike

The dike will be designed, constructed, operated, and maintained to provide flood protection for the cap and to prevent washout of the lagoon. See Figure 3. The dike will have less than a 3 to 1

FIGURE 3
CONCEPTUAL DESIGN SECTION
DIKE SLOPE PROTECTION


GRAVEL BLANKET
EXISTING VEGETATION CUT TO GROUND SURFACE
RIPRAP
INTERIOR OF LAGOON
GEOTEXTILE
EXISTING LAGOON DIKE
KEY TRENCH
1
3
EXISTING GROUND SURFACE

slope. The vegetation on the existing dike will be cut close to the ground surface and the cover system will be extended over the existing dike and anchored in a key trench. A gravel blanket and geotextile will be placed on the cover. Finally, riprap will be placed on the geotextile and extended into the key trench at the base of the dike slope.

The final riprap-covered dike will be designed to withstand a water velocity of at least 15 feet/second. This will ensure that it can withstand at least a 100-year flood event.

Quality Control and Assurance

During the design of the cover and dike, a quality control plan will be developed. The plan will ensure that the specification for each of the components of the cover and dike are met. Appropriate testing and observations will be included.

2. Establishing Alternate Concentration Limits (ACLs) as the Ground Water Protection Standard

EPA will set ACLs at the Yaworski Lagoon site. ACLs are ground water protection standards that are used to assure that hazardous constituents found in the ground water do not pose a risk to human health or the environment. To ensure that ACLs remain protective, the following conditions must continue to be met at the site:

a. The Quinebaug River must remain a discharge point for ground water from the site. If monitoring well clusters located on the other side of the river from the lagoon show contaminant levels above MCLs, the corrective action plan will be implemented as outlined below.

b. The Quinebaug River cannot be adversely impacted by the discharge of contaminated ground water into the river. Presently no adverse impacts to the river have been observed that can be attributed to the site. To ensure that future impacts do not occur at the point of exposure for environmental receptors in the river, seep meters and driven monitoring points will be installed to measure the discharge of contaminants to the river. Additionally, river water will be sampled to ensure that there is no statistically significant increase in contamination, as compared to up-gradient locations.

c. The ground-water use restrictions outlined below must be implemented and continued to ensure ground water within the

> meander is not consumed and the integrity of the Quinebaug River as a hydraulic barrier to ground water flow is maintained.

The specific provisions for setting the ACLs are outlined below.

ACL Contaminants and Concentrations

ACLs will be set for all contaminants found at the site that EPA determines are representative of the most toxic, mobile, and persistent chemicals found in ground water. The concentration for each hazardous constituent will be set at the concentrations found at the points of compliance at the site assuming that aforementioned conditions continue to be met.

Point of Compliance

The point of compliance is the location where ACLs are set and is also the well location were ACLs are monitored. At the point of compliance, ACLs will be set at concentrations that ensure that human health and the environment are protected at the point of exposure and no statistically significant increase in contamination occurs in the river.

The specific locations for the point of compliance monitoring are around the boundary of the lagoon and are designated as well clusters B, C, and G illustrated in Figure 4.

Point of Exposure

A point of exposure is a location where environmental or human receptors may be exposed to or use ground water. Exposure to ground water at that point of exposure cannot result in an endangerment to human health or the environment. At the Yaworski Lagoon site, the points of exposure will be set at the interface of ground water and the Quinebaug River. They will be monitored by seep meters and monitoring points along the east bank of the Quinebaug River. The location of the seep meters and monitoring points are adjacent to well clusters C, G, I, F, and L illustrated in Figure 4.

Ground Water Use Restrictions

Ground water use at the site will be restricted to ensure that contaminated ground water is not consumed and the hydraulic barrier that the Quinebaug River provides is not upset. Ground water use will be restricted within the meander loop of the

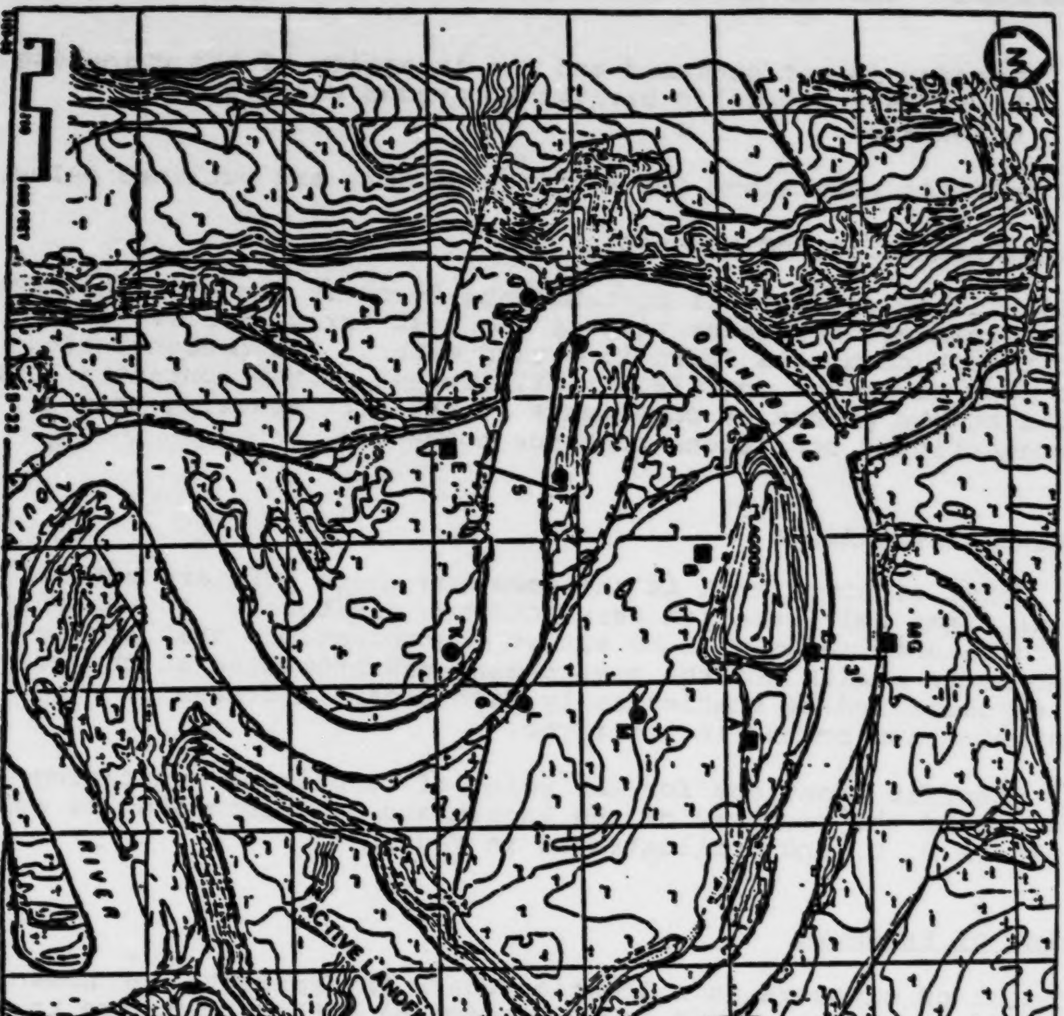

LEGEND
EXISTING WELL CLUSTER
NEW WELL CLUSTER
RIVER TRANSECT
ACTIVE LANDFILL
RIVER
RIVER
LAGOON
200 FEET

FIGURE 4
WELL AND WELL POINT LOCATIONS
YAVORSKI SITE

Quinebaug; from the river to the Yaworski solid waste landfill; and one hundred (100) feet outside of the river on the north, west, and south. South of the site, along the Quinebaug River valley, production wells (i.e., greater than 50 gpm) will be restricted within 1500 feet of the site. These restrictions will be implemented by the appropriate state and local authorities.

Ground Water Monitoring

Ground water will be monitored to ensure compliance with ACLs and to meet the three conditions listed at the beginning of this Subsection. Compliance monitoring will be conducted quarterly for ACL constituents or an approved subset of them at the point of compliance wells. If a subset of the ACLs are used, an analysis of all the constituents will be conducted at least once per year.

After the first time an ACL for a particular contaminant is exceeded, the well will be resampled. If the second analysis results in contaminant concentrations that still exceed the ACL, EPA and Connecticut will make a determination if the corrective action program outlined below will be implemented.

At the point of exposure (i.e., at the interface of ground water and the Quinebaug River), ground water discharging to the river will be monitored quarterly by seep meters and monitoring points alone the east bank of the river.

Additionally, well clusters A, M, L, F, I, MG, H, J, E and K will be monitored quarterly to ensure that the Quinebaug River continues to act as a discharge point and hydrological barrier to ground water flow. The monitoring frequency of these wells may be modified by EPA.

Surface Water and Sediment Monitoring

The surface water and sediment from the Quinebaug River will be monitored quarterly to ensure that there is no statistically significant increase in contamination due to the ground water recharge to the Quinebaug River. The river transects for this monitoring are illustrated in Figure 4.

Corrective Action and Contingency Planning

In the event ACLs are exceeded, if any of the three conditions outlined at the beginning of this Subsection are not met, or if changes in receptors or conditions at or in the vicinity of the site occur prior to or after setting ACLs such that ACLs are no longer protective of human health or the environment, a corrective action program that meets the requirements of 40 C.F.R. § 264.100 will be implemented. As part of the design of the remedial action, a corrective action contingency plan will be developed. Under the corrective action program, contaminated ground water will be extracted and treated or other necessary action will be undertaken to reduce contaminant levels to ensure that ACLs are not exceeded at the compliance point and that at the point of exposure the remedy is protective of human health and the environment.

If ground water needs to be treated at the site, different process options, including a combination of treatment technologies, will be considered during the design of the treatment system. The process presented in the Feasibility Study Report in Alternative # 4 is one possible process configuration that could be utilized and was presented to serve as the basis for costing and for comparison to other alternatives. During design of the treatment system, the particular technology or technologies will be chosen on the basis of performance goals that EPA sets for the treatment system.

The proposed ground water extraction system in Alternative 4 is intended to capture contaminated ground water that flows from the site. The exact well locations will be further refined in the development of the corrective action program.

3. Post-Closure Care

After final closure of the lagoon, the post-closure requirements contained in 40 C.F.R. § 264.310 and 40 C.F.R. §§ 264.117 through 264.120 will be met. Specifically, the following actions will be undertaken:

a. The integrity and effectiveness of the final cover will be maintained, including making any repairs to the cap as necessary, to correct the effects of settling, subsidence, erosion, or other events.

b. The ground water monitoring system will be monitored and maintained to comply with the requirements of 40 C.F.R. Part 264, Subpart F.

c. The site will be secured to meet the requirements of 40 C.F.R. § 264.14 during post-closure.

d. A written post-closure plan will be developed to meet the requirements of 40 C.F.R. § 264.118.

e. **Post-closure notices that provide a record of the type, location, and quantity of hazardous wastes disposed in the lagoon will be submitted to the authority in Connecticut with jurisdiction over local land use to meet the requirements of 40 C.F.R. § 264.119.**

Additionally, because hazardous substances will remain on-site, EPA will reevaluate this site at least once every five years after the commencement of the remedial action to assure that human health and the environment continue to be protected.

ESTIMATED TIME FOR CONSTRUCTION: 2 years
ESTIMATED PERIOD OF OPERATION: 30 Years of Monitoring
ESTIMATED TOTAL COST AS PRESENTED IN TABLE 4: $ 2,976,000

B. Rationale for Selection of the Remedy

In accordance with Section 121 of CERCLA, to be considered as a candidate for selection, an alternative must be protective of human health and the environment and able to attain ARARs. At the Yaworski Lagoon site, the concentrated, highly contaminated sludge and contaminated debris covering the sludge limited the number of viable remedial alternatives that could result in protective remedies that attain ARARs. For source control, the Agency was limited to a choice between alternatives that utilize incineration as a principle element, alternatives based on containing the lagoon wastes in-place, and minimal/no-action. For ground water, attainment of ARARs requires that a ground water protection standard be set at either Maximum Contaminant Levels (MCLs), ACLs or at background levels. To meet the ground water protection standard, ground water components, based on setting ACLs without treatment or in conjunction with a ground water treatment program, were added to the source control alternatives.

Because Alternatives # 1 and # 2, the minimal/no-action alternatives, are not protective and do not attain ARARs, they were rejected from further consideration.

The remaining four alternatives, based on incinerating the wastes or containing them in-place in combination with a ground water component, meet the statutory requirements of protectiveness and attainment of ARARs. To select among them, EPA focused on the other evaluation criteria, including: short-term effectiveness, long-term effectiveness, implementability, use of treatment to permanently reduce the mobility, toxicity or volume of waste, and

Table 4

COSTS FOR IMPROVED CAP AND DIKE WITH AN ACL DEMONSTRATION FOR GROUNDWATER

Direct Capital Costs

	Task	Unit Cost	Quantity	Cost
1.	Perimeter Fence	$ 22/ft	2,800 ft	$ 62,000
2.	Install Wells	$1,600/ea	8 ea	12,800
3.	Install Piezometers	$ 800/ea	9 ea	7,200
4.	Rip-Rap/Dike Improvement	$ 33/yd^3	9 ea	110,000
5.	Monitoring System Design			15,000
6.	Initial Sampling Program			102,000
7.	Grade/Install Cap			1,002,600
8.	Gas Venting System			12,000
9.	Public Education			50,000
10.	Aquifer Characterization			50,000
11.	Development of ACLs			250,000
		Total Direct Capital Costs		$1,673,600

Indirect Capital Costs

	Task	Cost
1.	Engineering (15%)	$ 251,000
2.	Contingency (15%)	251,000
3.	Administration (5%)	83,700
	Total Indirect Capital Costs	$ 585,700

Operation and Maintenance Costs

	Task	Cost per Event	Frequency	Present Worth (5%) for 30 yrs
1.	Annual Site Inspection & Maintenance	$ 2,000	annually	$ 30,700
2.	Groundwater Monitoring	$36,000	annually	$553,400
3.	Continued Public Education	$ 5,000	annually	$ 76,900
4.	5-year Site Review	$20,000	every 5 yrs	$ 55,600
		Total O&M Present Worth		$716,600
		TOTAL COST		$2,976,000

cost. EPA also considered state and community acceptance. In addition, a number of site specific conditions and/or features played a critical role in shaping EPA's development of alternatives and selection of the remedy. These conditions and/or features included:

1. the location of the lagoon in a 100-year floodplain;
2. the action of the Quinebaug River to disperse and dilute contaminants and to act as a hydrologic barrier;
3. the proximity of the Yaworski Lagoon to an active solid waste landfill; and
4. the lithology of the aquifer in the river valley around the lagoon, which limits the ability to develop a large volume ground water extraction well.

Based upon this assessment, taking into account the statutory preferences of CERCLA, EPA selected the remedial approach for the site.

Capping and Diking

Capping and diking will be effective and protective of human health and the environment in the long-term. The cap and dike system will address the risk posed by contaminants seeping through the dikes into the wetlands and, at the same time, decrease or eliminate the flushing of lagoon contaminants into site ground water, thus providing a protective remedy. The impermeable cap, by containing the waste in place and minimizing the migration of rainwater through the lagoon, will reduce the discharge of contaminated leachate away from the lagoon and contaminant loading to ground water. The cap and dike system will also provide protection against 100-year flood events.

In contrast to the source control component of the selected remedy, Alternatives # 1 and # 2, both of which would require fencing to restrict access to the site, would not be protective and would not attain ARARs. These alternatives do not address threats from contaminated leachate seeps or potential impacts from floods and would not meet ARARs for closure of the lagoon.

Capping and diking also can be easily implemented at the Yaworski Lagoon site. These techniques are widely practiced methods for lagoon closure and the protection of ground and surface water. Materials for the cap and dike are also readily available. Capping and diking is estimated to take approximately two years to implement.

Further, capping and diking will be effective in the short-term. The relatively short duration of construction activities and the fact that capping will not involve the excavation of the lagoon materials will minimize the short-term impacts from exposure to volatile emissions or contact with contaminated leachate. Any erosion of surface soils into the wetlands as a result of grading and preparation of the cap and dike system will be minimized through the advent of erosion and sedimentation control measures.

In contrast to the selected remedy, Alternatives # 5 and # 6, both of which would require incineration of the source material, have the potential for significant air emissions during waste excavation and present substantial problems associated with siting a treatment facility and excavating large quantities of contaminated wastes in a floodplain.

Finally, capping and diking is cost effective. Incineration of the source material, which is the only source treatment technology that would be both effective and implementable at the site, is very expensive. Incineration is projected to cost approximately $100 million dollars at the site.

The particular cap and dike configuration presented follows EPA's guidance, "Covers for Uncontrolled Hazardous Waste Sites," (EPA/540/2-85/002) and takes into account site-specific conditions to ensure protectiveness. The guidance was used because it ensures that the configuration of the cap and dike will meet the RCRA requirements under 40 C.F.R. § 264.

Ground Water Protection Standard

Under RCRA regulations, the ground water protection standard establishes a safe level of contamination in ground water in the vicinity of a waste disposal site. Under these regulations, the protection standard can be set at MCLs, ACLs, or at background levels. EPA has established ACLs, as the ground water protection standard for the site. Specifically, EPA has determined that ACLs are the relevant and appropriate ground water protection standard for the Yaworski Lagoon site for the following reasons.

ACLs are based on the premise that, although ground water is contaminated around a waste disposal site, at a point where a potential receptor may come into contact with ground water, levels of contaminants are not found at unsafe levels. At locations where exposure to ground water may not be safe, enforceable controls to prevent exposure are implemented. At the Yaworski Lagoon site, that basic premise is satisfied. Ground water around the site is contaminated, however, the river and other site features contain and attenuate contamination in the ground water to protective levels and enforceable controls can be implemented.

In addition to the RCRA requirements, under Section 121(d)(2)(B)(ii) of CERCLA, 42 U.S.C. § 9612(d)(2)(B)(ii), EPA may not establish ACLs as the ground water protection standard for a Superfund site if human exposure to hazardous constituents will occur beyond the site boundary (as that boundary is defined in the RI/FS), unless EPA had determined that:

> there are known or projected points where the ground water will enter into the surface water;
>
> there is or will be no statistically significant increase in the level of hazardous constituents in the surface water at the points of entry or at any point where there is reason to believe accumulation of constituents may occur downstream; and
>
> the remedial action includes enforceable remedial measures to preclude human exposure to ground water between the site boundary and all known or projected points of entry.

The RCRA requirements and the CERCLA prerequisites for an ACL are met at the Yaworski site because of the following reasons:

1. The ground water characterization study in the supplemental Remedial Investigation concluded The Quinebaug River is a hydraulic barrier. Contaminated ground water from the site is contained in the river meander and discharges into the river. Thus, there are known or projected points where site ground water will enter into the Quinebaug River.

2. Sampling and analysis conducted by EPA indicates that the Quinebaug River acts as a hydrologic barrier that will tend to dilute and disperse contaminants. Sampling also indicates that, although levels of metals exceed Ambient Water Quality Criteria in the Quinebaug River meander, these levels are generally no higher than background levels upstream or downstream from the lagoon. Thus, there will be no statistically significant increase in hazardous constituents entering or accumulating downstream in the Quinebaug River.

3. Ground water that is contaminated by the site is not currently used as a source of drinking water. The Connecticut Public Health Code will be used to ensure that ground water within the river meander around the site is not

consumed. Additionally, this authority will be used to restrict large volume production wells that could pull contaminated ground water from the river meander. These actions will preclude human exposure to ground water between the site boundary and all known or projected points of exposure.

4. Because the impermeable cap will prevent infiltration of rainwater into the waste lagoon, flushing of lagoon contaminants into ground water will be significantly decreased.

5. The setting of ACLs for individual contaminants at the points of compliance will ensure that human and environmental receptors are not exposed to unsafe levels of contaminants at the points of exposure. In the event an ACL for an individual contaminant is exceeded, corrective action at the site will be implemented consistent with Section X.A.2. Thus, the setting of ACLs provides EPA and the State of Connecticut with an enforceable mechanism that sets into motion corrective action.

ACLs will be effective and protective of human health and the environment in the long-term. Although the development of ACLs as the ground water protection standard will not reduce contaminants in ground water, their development will ensure protection of public health and the environment at each and every point of exposure. Further, the corrective action program will ensure that the remedy continues to be effective. Alternative # 4, which calls for pumping and treating ground water in addition to the implementation of the cap and dike system, may be no more protective than selected remedy because ground water beneath the lagoon could never be cleaned up to drinking water standards. However, pumping and treating ground water may be implemented under the corrective action plan to ensure that ACLs are not exceeded.

Developing ACLs for site contaminants can be implemented at the Yaworski Lagoon site. The construction, installation, and sampling of monitoring wells is a common practice at CERCLA sites. Little difficulty would be expected in securing the services of an experienced and qualified firm to install and sample monitoring wells. Implementation of this alternative would require institutional controls to restrict land and ground water use. Deed restrictions and/or land-use controls are mechanisms that can be easily put into place with the cooperation of the Connecticut Department of Public Health. ACL and institutional control implementation is expected to take approximately two years.

Community reaction to the selected remedy was mixed; although some members supported the Agency's approach, the majority preferred either off-site disposal or incineration.

Off-site disposal without treatment was not carried through detailed analysis in the Feasibility Study because it would be difficult to implement due to the RCRA land disposal restrictions governing untreated solvent-containing waste. Moreover, it would be difficult to locate a RCRA-permitted facility willing to accept untreated waste from the Yaworski Lagoon site. Off-site incineration was not carried through to detailed analysis because it would be difficult to implement in light of the low operating capacities of existing off-site facilities. Finally, incineration is very expensive.

Summaries of the public's comments on the Feasibility Study Report and the Proposed Plan and EPA's response to those comments can be found in the Responsiveness Summary, which is attached as Appendix A.

The State of Connecticut concurs in the selection of the remedy. The State's role in the selection process is addressed in Section XII.

XI. STATUTORY DETERMINATIONS

The remedial action selected for implementation at the Yaworski Lagoon site is consistent with CERCLA and, to the extent practicable, the NCP. The selected remedy is protective of human health and the environment, attains ARARs, and is cost effective. The selected remedy does not, however, satisfy the statutory preference for treatment which reduces the mobility, toxicity, or volume of waste as a principal element. Nevertheless, given site-specific waste types and quantities and geographic features, the selected remedy utilizes permanent solutions and alternate treatment technologies or resource recovery technologies to the maximum extent practicable.

A. The Selected Remedy is Protective of Human Health and the Environment

From the risk assessment, EPA concluded that contaminants seeping through the present lagoon dikes into the wetlands pose a risk to environmental receptors. EPA also concluded that if ground water were to be used as a source of drinking water, it would pose a threat to human health. The selected remedy specifically addresses these risks.

Because the impermeable cap prevents the infiltration of rainwater into the waste lagoon, flushing of lagoon contaminants into the ground water will be significantly decreased. Moreover, the advent of institutional land use controls at the site, such as deed restrictions and zoning changes, will prevent the consumption of ground water at the site.

Sampling and analysis conducted by EPA indicates that the Quinebaug River acts as a hydrologic barrier and dilutes and disperses contaminants. Thus, setting contaminant levels in the Quinebaug River at the ACL of individual contaminants is appropriate and is consistent with the prerequisites of Section 121 of CERCLA. These levels will ensure that human and environmental receptors are not exposed to unsafe levels of contaminants in the river. The setting of ACLs also provides EPA and the State of Connecticut with an enforceable mechanism that will trigger corrective action at the site consistent with Section X.A.2. in the event those levels are exceeded.

In addition to decreasing contaminant loading to ground water, the cap will contain the waste in place, thus eliminating the threat to environmental receptors of being exposed to contaminated leachate. The dike system, in conjunction with the cap, will also provide protection to both human and environmental receptors from 100-year flood events.

In sum, EPA has determined that the selected remedy at this site is protective of human health and the environment.

B. The Selected Remedy Attains ARARs

The selected remedy will attain all applicable or relevant and appropriate federal and state environmental requirements at the site. Federal environmental laws that are applicable or relevant and appropriate to the selected remedial action at the Yaworski lagoon site include the:

1. Resource Conservation and Recovery Act (RCRA);
2. Clean Water Act (CWA);
3. Clean Air Act (CAA);
4. Safe Drinking Water Act (SDWA);
5. Occupational Safety and Health Act (OSHA);
6. Executive Order 11988 (Floodplain Management); and
7. Executive Order 11990 (Protection of Wetlands)

State environmental laws that are applicable or relevant and appropriate to the selected remedial action at the site are:

1. Connecticut Water Quality Standards and Classifications;
2. Connecticut Standards for Quality of Public Drinking Water;
3. Connecticut Hazardous Waste Facility Siting Rules;
4. Connecticut Hazardous Waste Management Regulations;
5. Connecticut Inland Wetland and Water Courses Regulations; and
6. Connecticut Public Health Code

Table 5 provides a synopsis of the applicable or relevant and appropriate requirements for the selected remedy. A discussion of how the selected remedy meets those requirements follows.

Lagoon Closure in a Floodplain

The applicable or relevant and appropriate requirements for the closure of the lagoon are regulations promulgated pursuant to the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §§ 6901 et seq., Executive Order 11988 (Floodplain Management), the Connecticut Hazardous Waste Facility Siting Rules, Title 22a, and the Connecticut Hazardous Waste Management Regulations.

The cover will be designed and constructed to meet RCRA closure requirements found at 40 C.F.R. § 264.310 and the Connecticut Hazardous Waste Management Regulations and Facility Siting Rules. Because the lagoon is situated in the floodplain, the cover and dike will be designed, constructed, and maintained to prevent washout from a 100-year flood event as required by 40 C.F.R § 264.18. Moreover, the cap and dike system will be designed so as to minimize the potential for harm to or within the floodplain consistent with the Floodplains Executive Order and 40 C.F.R. Part 6. EPA has determined that constructing the cap and dike system in the floodplain is the only practicable alternative consistent with the law and policy set forth in the Executive Order.

Ground Water

RCRA ground water protection standards (GWPS), 40 C.F.R. Part 264, Subpart F, are established for constituents entering ground water from a regulated hazardous waste unit. Although RCRA is not applicable to the Yaworski Lagoon site, the waste lagoon presents problems that are similar to those that the requirements address, and thus, the requirements are relevant and appropriate. GWPS under the RCRA regulations are set at MCLs, ACLs, or at background levels. Because the Quinebaug River acts as a hydrologic barrier for site ground water, EPA has determined that ACLs are the relevant and appropriate standards at the Yaworski Lagoon site.

Beyond the Quinebaug River meander, where ground water exposure may occur, Connecticut Standards for Quality of Public Drinking Water, which set allowable levels for the ingestion of benzene and 1,2-dichloroethane that are more stringent than federal requirements; Ambient Water Quality Criteria promulgated pursuant to the Clean Water Act; and MCLs[4] promulgated pursuant to the Safe Drinking Water Act are ARARs. These standards are relevant and appropriate for ground water at the point where exposure to ground water may occur. ACLs will be set to ensure that these requirements are met beyond the Quinebaug River meander. In addition, EPA Risk Reference Doses (RfDs), Carcinogen Assessment Group Potency Factors, and Interim Sediment Criteria Values will be considered in the development of ACLs.

As part of the process to establish ACLs as the ground water protection standard, ground water use at the Yaworski Lagoon site will be restricted to ensure that contaminated ground water is not consumed. The Connecticut Public Health Code provides the authority to permit the construction of ground water wells that are used for potable water. This applicable requirement will be used to ensure that ground water within the Quinebaug River meander around the site is not consumed. Additionally, this authority will be used to ensure that large volume ground water extraction wells, which could prevent the river from acting as a hydrological barrier, are not installed within 1500 feet of the site.

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[4] Maximum Contaminant Level Goals (MCLGs) established under the Safe Drinking Water Act are not relevant and appropriate at the Yaworski Lagoon site. MCLGs are only considered when a site poses extraordinary risks through multiple contaminants and/or exposure pathways. These extraordinary conditions do not exist at the Yaworski Lagoon site. Moreover, MCLs provide legally enforceable standards for drinking water that are protective of public health and the environment and are set as close to MCLGs as feasible taking into consideration best technology, treatment techniques, and other factors. See letter dated May 21, 1987 from Lee M. Thomas, Administrator, United States Environmental Protection Agency to Honorable James J. Florio, Chairman, Subcommittee on Commerce, Consumer Protection and Competitiveness, House Committee on Energy and Commerce.

Surface Water

The Connecticut Water Quality Standards and Classifications provide regulatory criteria for maintaining the quality of surface waters. The Quinebaug River is classified as "B"; suitable for recreation, agricultural purposes, certain industrial processes, fish and wildlife, and aesthetic value. Parameters regulated for Class B waters are aesthetics, dissolved oxygen, sludge deposits, silt or sand deposits, turbidity, coliform bacteria, taste and odor, temperature, discharges, and benthic invertebrates. The selected remedial action is in accordance with the standards for Class B surface waters.

Wetlands

During the identification, development, and screening of alternatives, EPA considered each alternative's impact on wetlands in accordance with Section 404 of the Clean Water Act, 33 U.S.C. § 1344, and the Connecticut Inland Wetland and Water Courses Regulations, Title 22a. By minimizing and/or eliminating the discharge of leachate from the waste lagoon, the selected remedy addresses the primary threat to the site wetlands, and thus, complies with 40 C.F.R. Part 6 and the Wetlands Executive Order 11990, which require CERCLA response actions to minimize harm to wetlands. EPA has determined that constructing the cap and dike next to the wetland is the only practicable alternative consistent with the law and policy set forth in the Executive Order and EPA regulation.

Air

The construction of the cover for the site will not involve the excavation of any waste materials and, therefore, hazardous air pollutants will not be emitted. During this construction phase, however, the National Ambient Air Quality Standards for total suspended particulate (dust) set under the Clean Air Act are applicable.

OSHA

All applicable safety and health requirements established under the Occupational Safety and Health Act will be met for the construction of the cover, installation of wells, and for any other remedial activities.

Post-closure care

After closure of the lagoon the relevant and appropriate post-closure requirements of 40 C.F.R. §§ 264.14, 264.117 - 264.120, and 264.310 will be met. Monitoring of ground water will be conducted in accordance with the relevant and appropriate RCRA ground water monitoring requirements under 40 C.F.R. Part 264, Subpart F.

Corrective Action and Contingency Planning

In the event that additional remedial activities are required, as described in Section X, these activities will attain all ARARs. These remedial activities will be conducted in accordance with the relevant and appropriate corrective action regulations, 40 C.F.R. § 264.100. The other ARARs for these activities are discussed in the analysis of Alternative # 4 in Chapter 10 of the Feasibility Study Report.

C. The Selected Remedial Action is Cost Effective and Utilizes Permanent Solutions and Alternative Treatment Technologies or Resource Recovery Technologies to the Maximum Extent Practicable

Once EPA identifies alternatives that are protective of human health and the environment and attain ARARs (unless a waiver is invoked), EPA evaluates each of those alternatives to determine their cost-effectiveness. Because the two alternatives that cost less than the selected remedy are not protective, they were eliminated from further consideration.

For each alternative a detailed estimate of present-worth costs with an accuracy of -30 to +50 percent was developed. Capital and operation and maintenance costs were estimated for each alternative assuming thirty (30) years of operation and maintenance using a five (5%) percent interest rate. These costs were then converted to 1988 dollars through a present-worth analysis.

In the course of conducting the Remedial Investigations and the Feasibility Study, EPA evaluated a range of waste treatment technologies at the site, including various in-situ, solidification, and incineration technologies. Because of the quantity of waste in the lagoon and the very high level of contaminants in the waste, all of the technologies other than

Table 5 - ARARs

REQUIREMENT	REQUIREMENT SYNOPSIS/CONSIDERATION
RCRA Closure Regulations, 40 C.F.R. § 264.310	The cap will be designed and constructed to meet these relevant and appropriate regulations.
Connecticut Hazardous Waste Management Regulations, promulgated pursuant to Connecticut General Statutes (CGS), § 22a-449(c)	These regulations outline general requirements for the management of hazardous waste facilities in Connecticut. The cap and dike will be designed and constructed to meet these relevant and appropriate requirements.
Connecticut Hazardous Waste Facility Siting Rules, promulgated pursuant to CGS §§ 22a-116-122	These rules specify siting and location requirements for the construction of hazardous waste facilities. The cap and dike will be constructed to meet these relevant and appropriate rules.
RCRA Location Regulations, 40 C.F.R. § 264.18	The cap and dike will be designed, constructed, and maintained to prevent washout by a 100-year flood in accordance with this relevant and appropriate regulation.
Executive Order 11988 and EPA Regulation, 40 C.F.R. Part 6	The Floodplains Management Executive Order and this EPA regulation are applicable and were weighed in the evaluation and development of remedial alternatives. The cap and dike system will be constructed in such a manner to avoid or minimize adverse impacts to the floodplain because no practicable alternative exists.
RCRA Ground water Protection Standards, 40 C.F.R. Part 264, Subpart F	Setting ACLs as the ground water protection standards for the site meets these relevant and appropriate regulations.
Federal Ambient Water Quality Criteria (AWQC)	AWQC are health-based criteria developed for 95 carcinogen and non-carcinogens. AWQC are relevant and appropriate requirements for ground water at the point of exposure.

Table 5 - ARARS Continued

REQUIREMENT	REQUIREMENT SYNOPSIS/CONSIDERATION
Safe Drinking Water Act regulations establishing Maximum Contaminant Levels (MCLs), 40 C.F.R. Part 141, Subpart B	These regulations establish contaminant concentration levels in public drinking water. They are relevant and appropriate at the site at the point of exposure.
EPA Risk Reference Doses (RfDs)	RfDs are dose levels of non-carcinogens developed by EPA. RFDs will be considered in the development of ACLs.
Carcinogen Group Potency Factors	These factors are used to compute individual incremental cancer risk resulting from exposure to carcinogens. They will be considered in the development of ACLs.
Federal Interim Sediment Criteria Values	These criteria will be considered during the development of ACLs. These interim health-based criteria are used to characterize risk to aquatic life.
Connecticut Standards for Quality of Public Drinking Water, promulgated pursuant to CGS § 19a-37	These standards regulate contaminant concentration in drinking water. Connecticut standards for benzene and 1,2 dichloroethane are relevant and appropriate at the point of exposure because they are more stringent than SDWA MCLs.
Connecticut Public Health Code, promulgated pursuant to CGS § 19a-36	This law provides the Connecticut Department of Health with permit authority over wells supplying potable water. This applicable law will allow Connecticut to apply enforceable controls to restrict ground water use within one mile of the site.

Table 5 - ARARs Continued

REQUIREMENT	REQUIREMENT SYNOPSIS/CONSIDERATION
Connecticut Water Quality Standards and Classifications, promulgated pursuant to CGS § 22a-426	These standards, which are applicable, provide criteria for classifying and maintaining the quality of surface water. Chemicals released to Quinebaug River must not degrade its designated quality, Class B.
Section 404 of the Clean Water Act, 33 U.S.C. § 1344 and 40 C.F.R. Part 230	Under this applicable law and regulation, no activity that adversely affects a wetland is permitted if a practicable alternative exists. The law and regulation were weighed during the evaluation of alternatives. The design of the cap and dike system shall be in accordance therewith.
Connecticut Inland Wetland and Water Courses Regulations, promulgated pursuant to CGS § 22a-30	These Regulations limit activities that deposit material in, alter, or pollute wetlands, and thus, they were weighed during the evaluation of alternatives. The cap and dike system will be designed and constructed in accordance with these applicable regulations.
Executive Order 11990 and EPA Regulation, 40 C.F.R. Part 6	The Protection of Wetlands Executive Order and this EPA regulation are applicable and were weighed in the evaluation and development of remedial alternatives. The cap and dike system will be constructed in such a manner to avoid or minimize the destruction, loss, and degradation of site wetlands and to preserve and enhance the natural and beneficial uses of the wetlands.
National Ambient Air Quality Standards (NAAQS), 40 C.F.R. § 50.6, promulgated pursuant to the Clean Air Act.	This regulation outlines the maximum primary and secondary 24-hour concentrations for particulate matter. This regulation is applicable during construction of the remedial action.

Table 5 - ARARs Continued

REQUIREMENT	REQUIREMENT SYNOPSIS/CONSIDERATION
Worker safety regulations, 29 C.F.R. Part 1910, promulgated pursuant to the Occupational Safety and Health Act	These applicable regulations contain safety and health standards that will be met during all remedial activities, including, construction of the cover and installation of monitoring wells.
RCRA Post-closure Regulations, 40 C.F.R. §§ 264.117 - 264.120, and 264.310, and Part 264, Subpart F.	These regulations are relevant and appropriate after closure of the lagoon. These regulations include provisions for development of a post-closure plan, reporting, and groundwater monitoring.
RCRA Corrective Action Regulations, 40 C.F.R. § 264.100	This relevant and appropriate regulation specifies activities that must be undertaken if corrective action becomes necessary at the site.

incineration are either not implementable and/or effective, and thus, not practicable. See Section 9.2.4 of the Feasibility Study Report. Although incineration would be protective of human health and the environment, and could potentially be implementable, alternatives that include incineration of the source material were rejected because of the costs of incineration and the short-term impacts associated with implementation of incineration alternatives. Thus, source control treatment was rejected at the site because treatment alternatives were either not cost effective or not practicable.

The development of ACLs as the ground water protection standard at the site will be protective because ground water contamination is contained within the Quinebaug River meander and the contained ground water recharges to the river. To prevent the exposure to ground water contained within the river meander, enforceable measures to restrict ground water consumption at the site can be implemented. Treatment of ground water is not necessary to assure protectiveness as long as it is demonstrated that no statistically significant increase in contaminants entering or accumulating downstream in the river is occurring.

Moreover, it is technically infeasible to achieve drinking water standards at the Yaworski Lagoon site without treatment of the waste in the lagoon. Alternative # 4, which calls for ground water treatment to be implemented initially as part of the alternative, rather than as a corrective action measure, is thus, not practicable. If and when corrective action measures are implemented, positive results would be expected from implementation of a ground water treatment system. Such a system would impart significant benefit to the ground water quality and reduce loading of contaminants to the Quinebaug River, thus rendering the system practicable.

Thus, EPA has determined that the selected remedy is cost effective and utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable.

D. The Selected Remedy does not Satisfy the Preference for Treatment as a Principal Element

The selected remedy does not include treatment and thus does not satisfy the preference for treatment as a principal element. Treatment-based alternatives were because treatment is not cost-effective or practicable. For an elaboration on those considerations, see Section XI, Subsections C.

XII. STATE ROLE

The Connecticut Department of Environmental Protection has reviewed the various alternatives and has indicated its support for the selected remedy. The State of Connecticut has also reviewed the Remedial Investigation Report, the Public Health and Environmental Risk Evaluation, and the Feasibility Study Report to determine if the selected remedy is in compliance with applicable or relevant and appropriate State environmental laws and regulations. On the basis of these analyses, the State of Connecticut concurs with the selected remedy for the Yaworski Lagoon site. A copy of the declaration of concurrence is attached as Appendix C.

RECORD OF DECISION
YAWORSKI LAGOON SITE

APPENDIX A

RESPONSIVENESS SUMMARY

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Preface

The U.S. Environmental Protection Agency (EPA) held a public comment period from July 28, 1988 to August 24, 1988 to provide an opportunity for interested parties to comment on the July 1988 Feasibility Study (FS) and Proposed Plan for the Yaworski Lagoon Superfund site in Canterbury, Connecticut. The FS examines and evaluates various options, called remedial alternatives, for addressing contamination in the lagoon area. EPA identified its preferred alternative for the cleanup of the site in the Proposed Plan that was issued before the start of the public comment period.

This responsiveness summary identifies the significant comments raised during the public comment period, and provides EPA responses to the comments. EPA will consider all of the comments summarized in this document before selecting a final remedial alternative for the Yaworski Lagoon Superfund site.

This responsiveness summary is divided into the following sections:

I. Background on Community Involvement and Concerns - This section provides a brief history of community interests and concerns regarding the Yaworski Lagoon site.

II. Summary of Comments Received During the Public Comment Period and EPA Responses - This section summarizes and provides EPA responses to the written and oral comments received by EPA from the public during the public comment period.

III. Remaining Concerns - This section describes issues that may continue to be of concern to the community during the design and implementation of EPA's selected remedy for the Yaworski Lagoon site. EPA will address these concerns during the Remedial Design and Remedial Action (RD/RA) phase of the cleanup process.

Attachment A - This attachment provides a list of the community relations activities conducted by EPA to date at the Yaworski Lagoon site.

I. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

A. Site Description

The Yaworski Lagoon site is located on approximately 100 acres of land in Canterbury Township, Windham County, Connecticut. The site consists of a former liquid and industrial waste disposal lagoon situated in a meander loop on the floodplain of the Quinebaug River. Approximately 2000 feet southeast of the lagoon is an operating solid waste landfill owned by the Yaworski family, the same individuals who operated the Yaworski Lagoon. (Refer to Figure 1). In the past, a portion of the adjacent floodplain east and south of the lagoon was used to cultivate silage corn. The remaining area adjacent to the lagoon is composed of wetlands. The nearest residence is approximately 1/2 mile to the west. Plainfield, the nearest adjacent town, is located 3 miles to the east.

Between 1950 and 1973, sludge materials and drums of industrial waste including solvents, paints, textile dyes, acids, resins, and other debris were disposed in the lagoon, which measures approximately 700 feet long by 300 feet wide. Flammable waste was burned periodically at the site until 1965, when the Connecticut Department of Health ordered a halt to the on-site burning of waste. All disposal operations ceased in 1973. By order of the State, the lagoon was subsequently covered by Mr. Yaworski with paper, rags, rubble, and soil. After a fire occurred at the site in 1982, EPA concluded that additional information was needed about the site to better access the potential threat to human health and the environment. In 1984, the site was added to the National Priorities List (NPL), EPA's list of top priority hazardous waste sites, thus making the site eligible for investigation and cleanup under the federal Superfund program. EPA completed the first of the two Remedial Investigations (RI) in April 1986. In 1987 and in the spring of 1988, additional work was conducted to further define the nature and extent of contamination. As a result of this work, the second or supplemental RI was completed in July 1988. The Feasibility Study (FS), which contains the development and analysis of remedial alternatives, was completed along with the second RI in July 1988.

B. Community Awareness of the Yaworski Lagoon site

Community awareness generated by past and present activities at the Yaworski Lagoon site has been high. When the site was added to the NPL in 1984, an active local community group called Committee of Correspondence, which was involved in halting an interstate highway in the area, was invited to join the Eastern Connecticut Citizens Action Group (ECCAG). ECCAG, which covers areas east of the Connecticut River, is part of a State-wide citizens organization. Even before the site was placed on the NPL, members of ECCAG and other local citizens believed that the State's plan to cover the lagoon was an inadequate solution for the problems at the Yaworski Lagoon, especially after the fire that occurred in 1982. When EPA placed the site on the NPL, media coverage was extensive.

C. Concerns

This section summarizes concerns expressed at the FS public informational meeting held on July 27, 1988 and at the public hearing held on August 17, 1988.

1. Concerns Relating to the Capping Component of the Proposed Plan

Community members expressed concern regarding EPA's Proposed Plan to cover the lagoon. Instead, some residents would prefer to see the waste excavated and either burned on-site or taken off-site. Many residents have stated their belief that flooding of the area would damage the cap and cause further pollution of the Quinebaug River and surrounding wetlands. Residents have also expressed concern that the cap would not address waste that is being left in the lagoon, and that this waste would continue to cause ground water contamination.

2. Concerns Relating to Ground Water Contamination and EPA's Proposal to Set Alternate Concentration Limits (ACLs)

At the public meeting many residents expressed their concern about whether contamination from the Yaworski Lagoon site may have affected their drinking water wells. In response to these concerns, EPA sampled domestic wells along Packer Road just prior to the public hearing and found no contamination. As a result of these findings, citizens asked less questions at the public hearing than at the public meeting, although one citizen expressed skepticism about EPA's results.

Residents have asked EPA how an ACL demonstration would be implemented and whether establishing ACLs would ever make ground water drinkable.

3. **Risks to Human Health and the Environment**

Many citizens have expressed concern about contamination from the lagoon entering the River and the wetlands and posing risks to wildlife in these areas, as well as risks to people who swim or fish in the River.

4. **Cost and Enforcement**

Citizens stated that cost should not be a factor in EPA's decision-making process for choosing a remedy for the site and that the potentially responsible parties (PRPs) should be liable for all current, as well as future cleanup costs at the site.

5. **Yaworski Landfill**

A number of citizens commented on the Yaworski Landfill that is located near the site. At the public meetings, residents stated that the Yaworski Landfill probably contains hazardous materials and is just as much a threat to the environment as the lagoon. Residents stated that EPA should include the landfill in their investigations. The landfill, however, is not part of the Yaworski Lagoon Superfund site and is also not the subject of this cleanup decision. Questions regarding the landfill should be directed to the CT DEP.

6. **Extension of Comment Period**

During the presentation of oral comments, and during the question and answer period that followed during the August 17, 1988 public hearing, several citizens requested that EPA extend the comment period. Citizens indicated that more people should be notified and provided with the opportunity to comment on EPA's Proposed Plan.

7. **EPA's Decision-Making Schedule**

Citizens at the August 17, 1988 public hearing expressed their belief that they should have a chance to respond to EPA's selection of a remedy for the site, before that decision is final.

II. SUMMARY OF COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND EPA RESPONSES TO THESE COMMENTS

This responsiveness summary addresses the comments received by EPA on the Feasibility Study and Proposed Plan for the Yaworski Superfund site in Canterbury, Connecticut, during the public comment period held by EPA from July 28, 1988 to August 24, 1988. Five written comments were received. In addition, sixteen people presented oral comments at the August 17, 1988 public hearing. Copies of the hearing transcript are available at the information repositories located at the Canterbury Public Library, and the EPA Records Center at 90 Canal Street, First Floor, in Boston, Massachusetts. The written and oral comments are summarized and organized into the following categories:

A. Summary of Citizen Comments
B. Summary of Potentially Responsible Party (PRP) Comments

EPA responses are provided for each comment, or set of like comments.

A. Summary of Citizen Comments

1. Comments Concerning the Cap

a. Objections to the Cap

Comment 1: Many people that attended the public hearing do not support the capping component of the preferred alternative and would prefer that the lagoon contents be removed and either incinerated or taken off-site.

EPA Response: EPA evaluated a range of alternatives that, in addition to the selected remedy, included removing and incinerating the waste. Removing the waste from the site was rejected because it would be very difficult to implement. Off-site disposal without treatment would have to comply with the stringent Resource Conservation and Recovery Act (RCRA) land disposal restrictions. Moreover, it would be very difficult to locate a RCRA-permitted facility that would be willing to accept untreated waste from the site. Off-site incineration was rejected due to the low operating capacity at existing off-site facilities.

On-site incineration alternatives were also considered. They were not selected because they would be difficult to implement, may result in adverse short-term impacts when the wastes were excavated and are very costly.

Comment 2: Several commenters questioned how EPA could prove that contamination would not continue to leach into the environment over time and expressed concern about the problems that this contamination would present to future generations.

EPA Response: An evaluation of how contamination leached from the lagoon was completed and summarized in the supplemental Remedial Investigation. EPA concluded that the impermeable cover will stop rain from washing through the waste and will minimize contamination leaving the lagoon and provide a long-term, protective remedy.

Comment 3: Another resident remarked that capping the lagoon is a "cop-out", and that just because the lagoon would be covered up does not mean people would forget that it exists. He stated his belief that Canterbury is being treated unfairly, and that if Canterbury were a community like Stratford or Stamford the waste would be moved off-site.

EPA Response: Regardless of the size or location of the community in which a site is located, the same remedy evaluation and selection process is followed. Also, EPA is not forgetting about the site. Part of the remedy for the Yaworski Lagoon site includes evaluating the cleanup every five years, as well as providing routine maintenance and monitoring to ensure the cap works properly and the ACLs are not exceeded.

Comment 4: Another commenter asked that EPA remove the waste and re-establish the River, the land, and the wetlands to their original condition.

EPA Response: As discussed above, removing the waste from the site was rejected because it would be very difficult to implement. However, leaving the waste in place and properly containing it with the impermeable cover will be protective of the River, wetlands, and flora and fauna in the area.

Comment 5: Two additional commenters urged EPA to re-evaluate possible cleanup solutions for the site and provide a permanent solution.

EPA Response: EPA will not re-evaluate the cleanup plans for the site, but will review the remedy every five years to ensure protectiveness. The improved cap and dike and ACL will result in a long-term, protective remedy.

b. The Cap as an Interim Solution

Comment 6: Several commenters indicated that they felt that capping should proceed as proposed, but that it should be viewed as an interim solution. One commenter noted that although he believes that the only solution to addressing the contamination problem of the lagoon is to remove the waste, he would like to see the cap constructed soon if it will contain the waste.

EPA Response: The selected remedy is not an interim solution. Improving the cap and dike, establishing ACLs and providing long-term maintenance and monitoring at the site is a long-term remedy. Removing the waste from the site was rejected because it would be very difficult to implement.

Comment 7: Another commenter stated his belief, that in the short run, EPA should cap the lagoon. He expressed concern that, if EPA selected the incineration alternative, incineration would have to be conducted on site since there is too much waste to truck to an off-site facility, and that the five years it would take to burn the waste would damage the environment, especially air quality. He proposed that perhaps in a few years a new technology would be developed which could be used to clean up the wastes in the lagoon. Another commenter provided a similar comment, asking how the public can be assured that when cost effective technology does evolve that the proper actions are taken at the Yaworski Lagoon site.

EPA Response: As discussed, alternatives other than the selected remedy including removing the waste and incinerating it were considered and were determined to not be cost effective or practicable at the site. Although EPA does not plan to re-evaluate the remedy, the Superfund law requires EPA to review the remedy at the site every five years to ensure protectiveness.

c. Impact of Cap on the River

Comment 8: One commenter stated that EPA and the Connecticut Department of Environmental Protection (CT DEP) believe that the cap is an acceptable alternative because the Quinebaug River is polluted already. She argued that EPA's decision to continue to let leachate seep into the water should not be influenced by the fact that the River already has contaminants in it from upstream. She stated that EPA's goal should be to ensure the cleanup of the entire watershed. She expressed disagreement with what EPA refers to as acceptable standards, and with EPA's approach to minimize or reduce contamination. She stated her belief that EPA should eliminate or put an end to site contamination.

EPA Response: Regardless of the present water quality in the Quinebaug River, the remedy was not selected because the River is already polluted. The cap will greatly reduce contamination that migrates from the lagoon and, along with setting ACLs, ensure that the River water quality is not adversely impacted.

Comments 9 & 10: Another commenter also objected to the cap, noting that when she was a child, one could fish and swim in the River and now one cannot even see the bottom. A third commenter stated his belief that EPA plans to clean up the French River, which is one of the main tributaries for the Quinebaug River. He concluded that it would not make sense to clean up one of the upstream rivers and then leave the lagoon wastes in place, allowing pollution of the Quinebaug.

EPA Response: ACLs, which will be set for ground water that flows from the site into the River, will consider wildlife in the River and the River's present and future uses. The capped lagoon will not be allowed to adversely impact the River. If adverse impacts to the River result from the capped lagoon, a corrective action plan would be implemented consistent with the Record of Decision and contaminated ground water would be treated or other measures would be taken to ensure protectiveness.

Comment 11: The commenter also questioned the impact on the River of new incinerators being constructed in the area that will use Quinebaug water for cooling processes.

EPA Response: New incinerators that use water from the Quinebaug River are not the subject of this cleanup decision and, therefore, are not addressed here.

d. Implementation Issues

Comment 12: Several commenters recalled the flood of 1955 and other floods through the years and argued that the cap could not withstand these floods. Several commenters argued that flooding has caused contaminants to be washed downstream and additional flooding would cause more contaminants to be washed downstream. One commenter stated his belief that the lagoon has actually been flushed out several times as a result of local flooding and asked EPA for an estimate of the percent of the contaminants in the lagoon that have been flushed out and how far downstream these contaminants have gone.

EPA Response: EPA considered the potential for flooding at the site and incorporated this in the development, evaluation, and selection of the remedy. The cap and dike will be constructed to protect against flooding and washout.

As indicated, flooding in the past has contributed to contaminant moving from the lagoon. Although an exact estimate of how much waste has been flushed out by flooding cannot be made, contaminant migration was recognized as a problem and will be addressed by the selected remedy. Both the cap and dike will be built to withstand water velocities that could occur during floods.

Comment 13: One commenter asked what type of material would be used to construct the cap and how long the liners of the cap would last.

EPA Response: The cap will be made of five layers of materials: a top vegetative cover to protect against erosion and flood damage; a drainage layer to move rainwater off the cap and away from the waste; two low-permeability layers (a liner and a low-permeability soil layer) to stop rainfall from flowing into the waste and; finally, a foundation/bedding layer to support the layers above.

The liner will be made of a plastic that is very resistent to chemicals. It should last at least 30 years. Also, it will be maintained to ensure it continues to work after it is installed.

Comment 14: One commenter asked whether the two-year estimate for construction of Alternative #3 in the Proposed Plan is for initiation or completion of the cap. He also asked if the estimated $2,9 million covers the cost of thirty years of monitoring and which agency would be responsible for overseeing the monitoring.

EPA Response: The two-year estimate for construction of the cap is from start to finish. The estimated cost of $2.9 million covers construction, maintenance costs and 30 years of monitoring. If the governments conduct the remedy, CT DEP will be responsible for overseeing both the monitoring and any maintenance requirements beginning one year after the cap has been installed.

Comment 15: One commenter indicated that if EPA covers the lagoon with a cap that is topped by dirt and vegetation, it will look like a natural landscape and moles, mice, and groundhogs would punch holes in the cap.

EPA Response: When the cap is completed and vegetation has been established, the cap will look like a natural, small hill. As part of its routine maintenance, pests that could damage the cap will be controlled.

Comment 16: One commenter added that no one can know what will happen in one-hundred years, and that someone may decide to develop the area near the lagoon. He wondered how future development might impact the cap.

EPA Response: As part of the remedy, permanent notices will be provided to the appropriate State or local authority that indicate that a waste disposal site is present. No development will be allowed in the future at the site that might damage the cap. Additionally, ground water use will be restricted to ensure contaminated ground water is not used around the site.

Comment 17: One commenter noted that, in ecological terms, 30 years for monitoring of the cap is not a long time.

EPA Response: The 30 years of monitoring of the cap provides a common timeframe to compare different alternatives and allows engineers to develop cost estimates. As long as the cap is in place, it will be maintained and appropriate monitoring will be conducted. Also, the Superfund law requires that the cleanup be evaluated every five years to ensure it continues to be protective.

2. Comments Regarding the Testing of Ground Water and Alternate Concentration Limits (ACLs)

a. Ground Water Monitoring, Including Monitoring of Domestic Wells

Comment 1: One commenter indicated that it is difficult to judge the results of residential well testing based on one round of sampling and stated that he is not confident in EPA's testing results from home wells on Packer Road. He stated his belief that the lagoon contents will continue to seep out and threaten local drinking water. He also stated that he believes the cleanup will take a long time, regardless of whether EPA caps the site or incinerates the wastes, and that the ground water could become more contaminated over this time period. He requested that EPA consider installing a waterline connecting Canterbury to the Town of Plainfield's water supply, and make this part of the remedy.

EPA Response: The testing EPA did on the residential wells along Packer Road and South Canterbury Road showed no contamination from the lagoon. Also, testing done previously by the Connecticut Department of Health showed no contamination.

When the site is properly contained by the cap and monitored, the movement of contamination from the lagoon will be greatly reduced. Also, the cap will ensure that ground water will not become more contaminated in the future.

Because home wells are not contaminated and EPA believes they are not threatened by the site, installing a waterline or providing some other type of alternative water supply in the area is not part of the Yaworski Lagoon site cleanup.

Comment 2: One resident wanted to know the names of the people whose wells were tested and why his well was not tested.

EPA Response: The results of all the home well tests are available for public review in the Administrative Record for the site at the Canterbury Public Library and at EPA's Record Center at 90 Canal Street in Boston. The names of the people whose wells were tested were not given out to protect their privacy.

EPA's hydrogeologist identified a representative number of wells along Packer and South Canterbury Roads, based on their location and well type, that would show if any problems existed. Because no problems were found, EPA determined that testing all the wells was not necessary.

Comment 3: One commenter noted that most of the ground water sampling at the site was conducted in the spring. The commenter stated that Figure 5-15 of the RI shows that the highest level of contamination was found in Well B. The commenter expressed concern that contaminated water may be washed away from the River or underneath the River, particularly in the fall when the pressure in the aquifer is low.

EPA Response: Ground water sampling and analysis was done in the fall, as well as the spring. The testing done in the fall is summarized in the initial RI completed by NUS. Regardless of the season, EPA believes that, based on water elevation measurements, ground water flows to the Quinebaug River.

Comment 4: One commenter objected to the Agency's use of the terminology "acceptable levels of contamination in drinking water." She pointed out, along with another commenter, that humans are not the only creatures ingesting the water in the area; there are animals drinking water from the River and the wetlands. She stated her belief that there are no levels of contamination in ground water that should be considered to be acceptable.

EPA Response: In its decision to cap the site and establish ACLs, EPA considered the environment, as well as human health. The "acceptable levels" mentioned are standards set to ensure that drinking water is safe to drink and that ambient water is safe for animals and the environmental.

Comment 5: One commenter requested that EPA monitor wells periodically, such as every spring, to make sure that the ground water continues to be safe for those in the surrounding area with home wells.

EPA Response: A number of monitoring wells around the site will be tested periodically to ensure that the ACLs are not exceeded and to ensure that contamination is not moving toward drinking water wells. However, home wells will not be monitored.

Comment 6: One commenter asked how frequently ground water testing would occur, and who would perform the tests. He also asked what the results of the tests completed to date have been.

EPA Response: Ground water testing will occur quarterly. It will be conducted by either EPA, the CT DEP or a qualified testing company hired by the responsible parties at the site. If the responsible parties do the testing it will be closely monitored by EPA and the CT DEP.

All test results completed to date are summarized in the Remedial Investigation Reports. These reports are in the Administrative Record and are available for public review.

Comment 7: One commenter asked what the depths of the wells were that EPA tested south of the site. He asked if the depths reach into the recognized aquifer.

EPA Response: EPA's wells south of the site were installed into every part of the aquifer: near the top of the water table, in the middle and, finally, in bedrock. They were installed at depths from approximately 15 feet mean sea level to approximately 90 feet mean sea level.

b. Alternate Concentration Limits (ACLs)

Comment 8: One commenter asked if establishing ACLs would ensure an end to contamination at the site and whether the ground water would ever be drinkable.

EPA Response: ACLs will not end contamination at the site. Within the River meander ground water will not be drinkable. However, beyond the River meander, where home wells are, the ground water will continue to be drinkable.

Comment 9: One commenter asked if ACLs will be established upstream. The commenter asked how ACLs compare with concentrations established for public water supplies and whether ACLs will be established between the site and the landfill or down-river from the landfill.

EPA Response: ACLs are a set limit for chemicals in ground water. They will be established for ground water within the River meander. Upstream of the site and to the north outside of the River meander ground water is drinkable and, therefore, the standards for drinking water set under the Clean Water Act and Safe Drinking Water Act apply. ACLs are generally set at higher concentrations than those established for public water supplies.

Comment 10: One commenter asked what EPA means when the Agency says that if ACL's are exceeded, ground water use at and near the site will be restricted. The commenter asked what agency would have the jurisdiction to enforce the ACLs. The commenter also asked what corrective action measures would be taken if ACLs were exceeded.

EPA Response: Part of the process of setting ACLs is to restrict ground water use around the site. The ACL does not have to be exceeded to require these restrictions. EPA, the CT DEP, and the CT Department of Health will enforce the ACLs.

If ACLs are exceeded and EPA determines that corrective action is necessary, ground water may be pumped from the ground and treated. The pump and treatment system that would be as specified in the Record of Decision.

3. Costs, Liability, and Enforcement Issues

a. Costs

Comment 1: One commenter stated his belief that EPA's primary motivation in choosing the preferred remedy is that it is the least expensive. Another commenter argued that cost should not be considered at all when choosing the cleanup option. A third commenter said it would not be fair to leave the landfill mess to our grandchildren for the sake of money.

EPA Response: Cost is one of nine criteria that EPA considers when selecting a remedy. EPA does not necessarily select the lowest cost alternative that it can and, in fact, did not at the Yaworski Lagoon site. Also, cost is not considered until an alternative remedy has been shown to be protective of human health and the environment and in compliance with other applicable or relevant and appropriate federal and state environmental laws and regulations (ARARs).

Comment 2: One commenter stated that EPA has indicated that the State and the Town are going to have to assume the cost of the cleanup and asked whether that means that the federal government does not have funds available for the cleanup.

EPA Response: EPA, through the Superfund program, pays for cleanups if the work is not done by responsible parties. If EPA pays for the cleanup at the Yaworski Lagoon site, the Agency will fund 90% of the costs. The State would pay the other 10%. The Town would not have to pay for the work or the long-term maintenance that follows.

b. Liability

Comment 3: One commenter stated her belief that Mr. Yaworski has made millions of dollars from the lagoon and should be responsible for paying for removal of the wastes from the site.

EPA Response: Mr. Yaworski and a number of other parties have been noticed by EPA that they are potentially responsible for the cleanup of the site. EPA will negotiate with Mr. Yaworski and the other parties to pay EPA's past costs and to implement the remedy.

Comment 4: One commenter indicated that he believes the cleanup will be a long-term process and that the responsible parties should be required to post a bond to protect people in the Town from any costs or further damages that may be created if the cap does not work or the cleanup takes too long. Another commenter also expressed concern that the cap is just an interim solution and that responsible parties should be held liable now for any future costs of cleanup. This commenter argued, that in ten years, the responsible corporations may not exist.

EPA Response: EPA will begin negotiations shortly with the potentially responsible parties to determine their willingness and ability to conduct the remedial action at the site. During the course of these negotiations, future liability of the parties will be discussed.

Comment 5: One commenter was interested to know who, in addition to the Yaworskis, is responsible for the contamination in the lagoon. She asked if the CT DEP allowed disposal of wastes in the lagoon to occur.

EPA Response: InterRoyal Corporation; Kaman Aerospace Corporation; Pervel Industries, Inc.; Triangle PWC, Inc.; Rogers Corporation; C & M Corporation; and, Revere Textile Prints Corporation are also considered potentially responsible parties. CT DEP did not issue a hazardous waste facility permit for the Yaworski lagoon facility allowing waste disposal.

c. Enforcement

Comment 6: One commenter stated his belief that the federal and State laws that are in effect are not strict enough because these laws should not permit a dump to continue to exist by the side of a River. He commented that the River and surrounding area is an essential place for wildlife to live and eat.

EPA Response: An uncontrolled waste dump like the Yaworski Lagoon could not be built today because of recent changes in federal and state environmental laws that provide much stricter controls on how hazardous wastes are managed.

Although it is located by the Quinebaug River, capping the site and setting ACLs will be protective of both human health and the environment.

Comment 7: Another commenter stated her belief that there is no control over businesses such as the Yaworski Lagoon because of the free enterprise system. She stated that her understanding of the free enterprise system, however, is that it is free until it causes harm or it invades other people's property. She concluded that the officials in charge of the Yaworski Lagoon site are more concerned with Mr. Yaworski's checkbook than with other people's freedom.

EPA Response: Although cost was a factor in selecting the cleanup plan, no consideration was given to Mr. Yaworski or his finances in the remedy selection process.

Comment 8: One commenter expressed his disappointment with what he believes is a lack of enforcement conducted by the State of Connecticut with regard to the Yaworski Lagoon site.

EPA Response: The CT DEP has been active in enforcement activities at the Yaworski Lagoon site. In 1976, the CT DEP ordered Mr. Yaworski to install monitoring wells at the site. In 1980, the State ordered that a study be completed on environmental damage that the site was causing. And, finally, in 1982, the CT DEP ordered Mr. Yaworski to close the lagoon.

4. Risks Posed to Human Health and the Environment

a. Health Risks

Comment 1: Residents argued that, with the improved cap and dike, contaminants would continue to enter the River and present risk to people who fish or swim in the River. Several commenters noted that they no longer eat the fish from the River for fear that it is contaminated. One resident asked to know how many times one has to swim in the River before one's health is affected.

EPA Response: The improved cap and dike will stop rain water from washing chemicals from the lagoon and will minimize contamination that enters the River and ensure that the Yaworski Lagoon site does not contribute adversely to River water quality. Additionally, contamination levels have not been increased in the River due to the lagoon. Because of this, EPA believes the site will not harm fish or make it dangerous for people to swim in the River.

Comment 2: One commenter stated that there are three people who have lived or worked in the area near the dump who have cancer. She noted that a report issued from EPA several years ago stated that people's health in the site area is fine, and that no danger exists from drinking water from residential wells. The citizen asked why EPA did not investigate the number of cancer cases in the area as part of their studies.

EPA Response: A study of the number of cancer cases in an area around Yaworski would have been considered if EPA believed people had been exposed to cancer-causing chemicals from the lagoon. No study was done because there is no indication the that ground water people use is contaminated and there is no other exposure to chemicals from the lagoon.

b. Environmental Risks

Comment 3: Several commenters expressed concern that EPA had not conducted any fish sampling. These residents wanted to know if the fish in the Quinebaug River are contaminated. Several residents noted that they are concerned about contamination in the Quinebaug River because there is an anadromous fish (fish that swim upstream in rivers from the ocean to breed in fresh water) restoration plan. These commenters believe that leaving the contamination in the lagoon poses a threat to the fish.

EPA Response: A fish sampling and tissue analysis was not done by EPA. However, benthic/macro-invertebrate sampling was done and the results showed that the site does not adversely impact these species. Additionally, fish sampling and tissue analysis was conducted by ERT, an environmental engineering firm hired by the responsible parties. Their results indicated the site is not adversely impacting fish.

In the development, evaluation, and selection of the remedy, EPA did consider the anadromous fish restoration plan for the River. When ACLs are set and as part of the river monitoring program outlined in the selected remedy, the protection of anadromous fish will be addressed.

Comment 4: One commenter noted that page 6-32 of the Remedial Investigation states that anadromous fish may spawn in the wetlands near the Quinebaug River. This commenter remarked that this statement detracts from the credibility of the study because there have not been anadromous fish in that part of the River for 150 years.

EPA Response: The Remedial Investigation should have stated if anadromous fish are re-established, the wetland may serve as a spawning ground and nursery.

Comment 5: Several commenters indicated that the organisms in the wetlands would be harmed by the continued migration of contaminants from the lagoon. One commenter requested that EPA remove the waste from the lagoon area and try to restore the wetlands to their original condition.

EPA Response: Migration of contaminants from the lagoon to the wetlands could continue and harm organisms if no action was taken. However, the improved cap and dike will stop the contaminated leachate that causes the contamination that flows to the wetland.

Although the wetlands may be contaminated with some elevated levels of metals in the sediments, removal of the sediments would be ecologically destructive and was therefore not included in the remedy.

5. Community Relations Issues

Comment 1: One citizen argued that the comment period should be suspended or postponed for 90 days so that EPA can make another presentation to the residents of Canterbury so that they better understand what EPA plans to do. In particular, the commenter stressed that EPA needs to better explain the ACLs and the long-term levels at which they will be established.

EPA Response: EPA will not postpone the selection of the remedy or extend the public comment period. EPA explained the ACL process and answered questions about it at the public meeting on July 27, 1988. Additionally, EPA made available the Administrative Record, including the Remedial Investigation and Feasibility Study Reports and other background documents, on July 27, 1988. EPA believes that the four-week public comment period on the Proposed Plan was appropriate and allowed for meaningful public involvement.

During the design of the remedy and when the ACLs are set, EPA will conduct informational meetings and provide fact sheets on the progress of the work, and solicit public input.

Comment 2: One commenter noted that the Proposed Plan does not, but should, include provisions for sending the Town copies of the annual site inspection reports, ground water monitoring reports, and the five-year site appraisal reports.

EPA Response: Although the Proposed Plan does not include those provisions, the reports mentioned will be added to the Administrative Record for the site, as soon as they are completed and will be made available at the Canterbury Library, the information repository for the site.

Comment 3: One commenter asked how the final selection of the site cleanup will be made, and who will make the decision.

EPA Response: The final selection of the cleanup plan is made by EPA's Regional Administrator in Boston. The decision is made based on a review by the Regional Administrator of the reports and studies completed for the site, and the other supporting documents found in the Administrative Record. Additionally, the comments received from the public and EPA's responses are also considered in the decision.

Comment 4: One commenter explained that several years ago, EPA had sent her a letter regarding some wells they would be installing on her property. She said that she called to complain and EPA constructed the wells next door, instead. She pointed out that EPA never sent any information explaining why the wells were being installed in the area, and what the results of the sampling were.

EPA Response: EPA's Project Manager for the Yaworski Lagoon site is available to answer any questions about wells installed to characterize the site and to explain the results of sampling. Also, all the data collected is summarized and explained in the reports found in the Administrative Record.

In the case discussed above, EPA probably installed the wells on the other property because of schedule constraints that the Agency faced during well drilling operations and simply wished to avoid delays that could have been caused if access was denied by the first homeowner.

Comment 5: Two commenters asked why EPA had not notified every household in Canterbury of the problem associated with the Yaworski Lagoon site. These commenters stated their belief that EPA has not provided adequate notice to Canterbury residents. The commenters explained that they are new to the area and, because they were unaware of the situation regarding the site, they could not request to be added to EPA's site mailing list.

EPA Response: EPA provided appropriate notice of the cleanup plans to residents. EPA placed a public notice in a local paper, the Norwich Bulletin, in July, prior to the public meeting. In addition, the Proposed Plan was sent to everyone on the site mailing list, including local papers and radio stations.

6. Other Issues:

a. River Diversion

Comment 1: One commenter asked why there was no alternative in the Proposed Plan recommending a river diversion. The commenter stated that under a river diversion plan, the meander could be eliminated by putting a straight channel through the area, thus isolating the lagoon.

EPA Response: With proper flood protection, the River will not cause a problem at the closed Yaworski lagoon. Diverting the River is not necessary. In addition, it would cause ecological damage to divert the River and would be very expensive.

b. Zoning

Comment 2: One commenter noted that zoning in the Town of Canterbury presently would permit development on the site. The commenter stated that the Proposed Plan should at least state that the zoning regulations in Canterbury have to be changed to prevent development on the site property in the future.

EPA Response: The remedy for the site includes a requirement that notices that provide a record of the type, location, and quantity of hazardous wastes disposed in the lagoon, be submitted to the appropriate authority in Connecticut with jurisdiction over land use. No development will be allowed at the site in the future that could disturb the cap or impact its performance.

c. Mistake in FS

Comment 3: One commenter pointed out that page 8-2 of the FS states that the possibility of a total washout of the lagoon exists. However, the commenter stated, the report does not address how EPA plans to address the possibility of a washout.

EPA Response: Floods could erode the present cover and wash contaminants into the River. The improved cap and dike will be designed, constructed, and maintained to protect against damage caused by flooding and will prevent wastes from being washed into the River. In the development of the remedy, EPA reviewed FEMA data on flooding along the Quinebaug River and also estimated flood water speed. This information was used to develop the specifications for the materials used in the cap and dike, and how they would be built.

d. Contingency Plan

Comment 4: One commenter argued that there should be a contingency plan developed in case the cap fails.

EPA Response: A maintenance plan will be prepared for the cap and dike to ensure it does not fail. Under this plan, the cap and dike will be inspected periodically and any necessary repairs will be made. Additionally, a corrective action and contingency plan will be prepared to address any exceedance of ACLs.

e. Yaworski Report

Comment 5: One commenter claimed that Mr. Yaworski and some of the chemical companies that are considered to be potentially responsible parties developed a paper on incineration and asked why it should not be adopted. The commenter stated that this document was presented to EPA prior to EPA's proposal being released to the public.

EPA Response: The report on incineration prepared for the PRPs is part of the Administrative Record for the site. EPA considered information from the report when the Agency developed the Proposed Plan and when it selected the remedial action.

f. Property Values

Comment 6: One commenter asked if it is fair for the value of her property to decrease since she owns land near the dump, while other residential property continues to increase in value. She asked if there is any provision in the Proposed Plan that would ensure that her land will regain its value someday.

EPA Response: No, there is no provision in the Proposed Plan or in the Superfund law that addresses property values.

Comment 7: One commenter suggested that a waterline connecting Canterbury to Plainfield would ensure that property values near the Yaworski Lagoon site are not threatened.

EPA Response: Because home wells are not contaminated, there is no need for an alternate water supply such as a waterline. EPA does not take action under Superfund authority to ensure property values.

Comment 8: One commenter asked why his taxes are not decreasing if his property value is decreasing due to the dump.

EPA Response: Property taxes are a local issue outside of the jurisdiction of EPA.

g. Interagency Coordination

Comment 9: One commenter asked why EPA did not follow CT DEP's recommendation several years ago to place a partial cap on the lagoon. He argued that if a decision had been made then to cap the site, the contamination problem would not be as great today.

EPA Response: The lagoon was capped in 1982 as a result of an order from CT DEP to Mr. Yaworski. The decision by EPA to improve the cap and dike and set ACLs is based on studies completed in 1988. Until these studies were completed by EPA, an informed decision on a protective remedy could not be made.

B. Summary of Potentially Responsible Party (PRP) Comments

This section outlines the major comments received by EPA on the Yaworski Lagoon site RI, FS, and Proposed Plan by ERT. ERT has been hired as a consultant by the Yaworski Lagoon site PRP Committee and submitted comments to EPA on behalf of the committee. Two other comments were received from (1) Triangle PWC Inc., and (2) Hinckley, Allen, Snyder & Comen (on behalf of Pervel Industries) endorsing the comments submitted by ERT.

ERT stated that the proposed remedy is technically sound, protective of human health and the environment, and cost effective. The proposed remedy is consistent with and supported by the data collected by EPA's consultants as well as data collected and analyzed by ERT. ERT believes EPA's proposed remedy is appropriate because it addresses the major sources of site contamination and potential exposure pathways.

ERT also stated that the proposed remedy satisfies the seven technical criteria which are utilized to assess the applicability, feasibility and cost-effectiveness of the potential alternatives by: protecting public health and the environment; complying with ARARs, providing long- and short-term effectiveness; by reducing mobility; and by being reliable and cost effective.

ERT concurs with ATSDR's conclusion that "The Yaworski site does not pose a public health threat at this time."

1. Comments on the Remedial Investigation

Comment 1: ERT stated that a review of the mass flux calculations completed in the RI conducted by E.C. Jordan indicates that they represent worst-case conditions that would seldom occur in the lagoon. ERT concluded that, consequently, contaminant contributions to the ground water calculated in the RI are overestimated.

EPA Response: The mass flux calculations were developed using peak values and represent worst-case conditions. However, this does not necessarily overestimate contaminant contribution to the River and is an appropriate check to ensure that an ACL can be used a part of a protective remedy.

Comment 2: ERT stated that the RI conducted by E.C. Jordan mischaracterizes the nature of the wetland. The primary habitat/ecosystem functions of the wetland are related to emergent, wetland vegetation as shelter and food for terrestrial organisms, especially birds which would have only limited contact with the surface water. This type of wetland is flooded during vernal high river flows, and standing water is present in the wetland only one third of the time. Under these conditions, persistent aquatic invertebrates are restricted to those which can survive in moist sediments or which can complete the aquatic portion of their life cycles within a few months. Aquatic organisms are, therefore, not major components in this area. An argument for endangerment should be based on organisms which are structurally and functionally important to the system. ERT expressed the belief that there is no risk to aquatic organisms in the wetland.

EPA Response: Because of the variability of water levels in the wetlands, the wetlands probably act at times as primarily an aquatic environment and at other times as a terrestrial one. Regardless of this, the continued contaminant loading via leachate from the lagoon would cause environmental harm and there may be an imminent and substantial endangerment to the environment.

Comment 3: ERT stated that the surface-water results obtained by ERT are consistent with the results reported by NUS in the first RI conducted at the site, with the exception of selected metal analysis. ERT added that the differences in the two sampling rounds, however, may be a function of different sampling conditions and different analytical laboratories and are not significant.

EPA Response: EPA agrees that the surface water results obtained by ERT are consistent with previous results; however, variability is probable due to true variance in contaminant levels in the surface water, in addition to sampling and analysis differences.

Comment 4: ERT stated that fish sampling data gathered by ERT support the conclusion that the site appears to have no measurable effect on the quality of the fish in the River.

EPA Response: EPA believes that ERT data support the conclusion that the site presently appears to have no measurable effect on the quality of fish in the River.

2. Comments on the Feasibility Study

Comment 1: ERT argued that significant human health risks may be associated with the excavation of the lagoon. Removal of the existing cap that covers the lagoon will result in a release of volatile, and possibly liquid, contaminants from the lagoon. ERT pointed out that potential exposure to the contaminants would include inhalation of volatile contaminants, direct contact with waste material and inadvertent ingestion of the contaminated media.

EPA Response: EPA concurs that excavation of the waste from the lagoon could result in some short-term impacts, including some risks to human health particularly to on-site workers.

Comment 2: ERT stated that because the ground water at the Yaworski Lagoon site contains a variety of different compounds, a single ground water treatment technology may not effectively remove all contaminants from the site ground water. ERT concluded that a single treatment technology is not necessarily more cost effective than two different technologies in combination (i.e. steam-stripping and ultraviolet radiation/ozonation).

EPA Response: If ground water needs to be treated at the site as a result of the corrective action program, during design of the treatment system, different process options, including a combination of technologies, will be considered.

The process presented in the Feasibility Study Report in Alternative # 4 is one possible process configuration that could be utilized and was presented to serve as the basis for costing and for comparison to other alternatives. During design of the remedy, the particular technology or technologies selected will be dictated by the performance goals that EPA sets for the treatment system.

Comment 3: ERT stated that the rationale for the well placement is ambiguous and not clearly supported by E.C. Jordan's calculations. It is not clear whether the proposed pumping system will capture all contaminated ground water in the alluvium (clay, silt, sand, and gravel) beneath the lagoon.

EPA Response: The proposed pumping system is intended to capture contaminated ground water that flows from the site. The exact well locations will be further refined in the development of the corrective action program.

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III. REMAINING CONCERNS

During the public comment period, at the public informational meeting held in Canterbury on July 27, 1988, and at the informal public hearing held on August 17, 1988, local residents discussed issues that may continue to be of concern during the design and implementation phases of EPA's selected remedy for the Yaworski Lagoon site. These issues and concerns are described below:

(A) Design and Effectiveness of the Cap
Citizens have expressed concern regarding the specific design components of the cap, and regarding the effectiveness of the cap in preventing contamination from leaching into area ground water, the Quinebaug River, and the wetlands.

(B) Results of Ground Water Monitoring Tests
Citizens expressed interest in receiving updates regarding results of ground water monitoring tests.

(C) Five-Year Site Reviews
A number of citizens who view the cap as an interim solution expressed an interest in receiving updates of EPA's five-year reviews of the Yaworski Lagoon site, and any information regarding new technologies that could be utilized at the site to completely destroy the wastes in the lagoon.

To address these concerns, EPA will make available all design documents, testing results, and summary reports of the five-year site reviews. This information will be made available at the Canterbury Library. Additionally, EPA will hold public meetings and send out fact sheets to explain the progress at the site.

ATTACHMENT A

COMMUNITY RELATIONS ACTIVITIES
YAWORSKI LAGOON SITE
IN CANTERBURY, CONNECTICUT

Community relations activities conducted by EPA at the Yaworski Lagoon Superfund site to date have included:

- December 1984 - EPA held a public meeting to discuss the workplan for conducting remedial activities at the site.
- June 1985 - EPA released a community relations plan describing citizen concerns about the site and outlining a program to address these concerns and to keep citizens informed about and involved in site activities.
- May 1986 - EPA established information repositories at the Canterbury Library and the Selectmen's office.
- May 1986 - EPA released a fact sheet explaining the results of the initial RI activities occurring at the site.
- May 21, 1986 - EPA held a public meeting in Canterbury to explain the results of the initial RI.
- July 1988 - EPA mailed the Proposed Plan announcing EPA's preferred alternative for the Yaworski Lagoon site to all those on the site mailing list.
- July 1988 - EPA issued a public notice to announce the time and place of the upcoming FS public informational meeting and to invite public comment on the FS and Proposed Plan.
- July 27, 1988 - EPA held a public meeting in Canterbury to discuss the results of the FS and Proposed Plan.
- August 5, 1988 - EPA sent a letter to citizens on the mailing list announcing EPA's intention to test 15 home wells along Packer Road and South Canterbury Road on August 8, 1988.
- July 28, 1988 to August 24, 1988 - EPA held a four-week public comment period to accept comments on the Proposed Plan, on the other alternatives considered in the Feasibility Study Report, and on the other documents that are contained in the Administrative Record for the site.
- August 17, 1988 - EPA held an informal public hearing in Canterbury to accept oral comments on the remedial alternatives evaluated in the FS and Proposed Plan. EPA also explained the results of the home well tests taken on August 8, 1988, and provided the public with a fact sheet explaining these results.

RECORD OF DECISION
YAWORSKI LAGOON SITE

APPENDIX B

ADMINISTRATIVE RECORD INDEX

Yaworski Waste Lagoon
NPL Site Administrative Record
Index

As of September 29, 1988

Prepared for

Region I
Waste Management Division
U.S. Environmental Protection Agency

With Assistance from

AMERICAN MANAGEMENT SYSTEMS, INC.
One Kendall Square, Suite 2200 • Cambridge, Massachusetts 02139 • (617) 577-9915

Yaworski Waste Lagoon
NPL Site Administrative Record

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Administrative Record Index

Introduction

This document is the Index to the Administrative Record for the Yaworski Waste Lagoon National Priorities List (NPL) site. Section I of the Index cites site-specific documents, and Section II cites guidance documents used by EPA staff in selecting a response action at the site.

The Administrative Record is available for public review at EPA Region I's Office in Boston, Massachusetts, and at the Canterbury Public Library, 8 Library Road, Canterbury, Connecticut 06331. Questions concerning the Administrative Record should be addressed to the EPA Region I site manager.

The Administrative Record is required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA).

Section I

Site-Specific Documents

Administrative Record Index
not included.

Section II

Guidance Documents

GUIDANCE DOCUMENTS

EPA guidance documents may be reviewed at EPA Region I, Boston, Massachusetts.

General EPA Guidance Documents

1. Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. §§9601 et. seq., amended October 17, 1986.

2. Letter from Lee M. Thomas to James J. Florio, Chairman, Subcommittee on Consumer Protection and Competitiveness, Committee on Energy and Commerce, U.S. House of Representatives, May 21, 1987 (discussing EPA's implementation of the Superfund Amendments and Reauthorization Act of 1986).

3. "National Oil and Hazardous Substances Pollution Contingency Plan (NCP)," Code of Federal Regulations (Title 40, Part 300), 1987.

4. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Community Relations in Superfund: A Handbook (Interim Version) (EPA/HW-6), September 1983.

5. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Draft Guidance on Conducting Remedial Investigations and Feasibility Studies under CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act), Rev. March 1988.

6. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Draft Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites (OSWER Directive 9283.1-2), March 1988.

7. U.S. Environmental Protection Agency. Office of Emergency and Remedial Response. Superfund Public Health Evaluation Manual (OSWER Directive 9285.4-1), October 1986.

9. U.S. Environmental Protection Agency. Office of Ground-Water Protection. Ground-Water Protection Strategy, August 1984.

10. U.S. Environmental Protection Agency. Hazardous Waste Engineering Research Laboratory. Covers for Uncontrolled Hazardous Waste Sites (EPA/540/2-85/002), September 1985.

11. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Additional Interim Guidance for Fiscal Year 1987 Record of Decisions, July 24, 1987.

12. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Alternate Concentration Limits Guidance (OSWER Directive 9481.00-6C, EPA/530-SW-87-017), July 1987.

13. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Data Quality Objectives for Remedial Response Activities: Development Process (EPA/540/G-87/003), March 1987.

14. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Guidance on Feasibility Studies under CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) (EPA/540/G-85/003), June 1985.

15. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Guidance on Remedial Investigations under CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) (EPA/540/G-85/002), June 1985.

16. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. *Interim Guidance on Superfund Selection of Remedy* (OSWER Directive 9355.0-19), December 24, 1986.

17. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Memorandum from J. Winston Porter, July 9, 1987 (discussing interim guidance on compliance with applicable or relevant and appropriate requirements).

18. U.S. Environmental Protection Agency. Office of Water. Memorandum from William Hedeman, August 5, 1985 (discussing policy on floodplains and wetlands assessments for CERCLA actions).

RECORD OF DECISION
YAWORSKI SUPERFUND SITE

APPENDIX C

STATE CONCURRENCE

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

September 28, 1988

Michael R. Deland
Regional Administrator
United States Environmental Protection Agency
JFK Federal Building
Boston, MA 02203

Dear Mr. Deland:

This letter provides the State of Connecticut's concurrence on the selected remedy, as described in the Record of Decision and supporting documents, for the Yaworski site in Canterbury, Connecticut. In providing this concurrence, the State finds that the remedy will attain all applicable or relevant and appropriate State laws and regulations.

Sincerely yours,

John Anderson

Leslie A. Carothers
Commissioner

LAC:JRG:kal

Phone:
165 Capitol Avenue • Hartford, Connecticut 06106